SURVEILLANCE OF THE

BISON CONTROL AREA

JANUARY-APRIL 1994

Northwest Territories Renewable Resources

SURVEILLANCE OF THE BISON CONTROL AREA JANUARY-APRIL 1994

K.WILLIAMSON

C.C. GATES

AND

A. ILLASIAK

DEPARTMENT OF RENEWABLE RESOURCES

GOVERNMENT OF THE NORTHWEST TERRITORIES

FORT SMITH, NWT

1995

Manuscript Report No. 82

The contents of this paper are the sole responsibility of the authors.

ABSTRACT

In 1987, a Bison Control Area (BCA) was created in the southern Northwest Territories. The purpose of this Control Area is to reduce the risk of infection of the Mackenzie and Nahanni wood bison populations with bovine tuberculosis and brucellosis. These diseases are present in bison herds in the Slave River Lowlands, Wood Buffalo National Park and adjacent areas.

Three methods were used during the winter of 1994 to determine the presence and distribution of bison in and around the BCA: 1) aerial reconnaissance during the winter months, January-April; 2) ground surveillance (utilizing snowmobiles); 3) public involvement in reporting sightings. There were no confirmed sightings within the BCA, but in January, three small bison herds wandered across the Mackenzie River. They were chased back with a fixed wing aircraft. No animals were destroyed. Continued vigilance in the BCA is required if the risk of infection is to be kept at a minimum.

TABLE OF CONTENTS

ABSTRACT iii

LIST OF FIGURES vii

LIST OF TABLES viii

INTRODUCTION 1

METHODS 4
Aerial Reconnaissance 4
Ground Surveillance 7
Public Involvement - Reported Sightings 7

RESULTS 9

DISCUSSION 13

ACKNOWLEDGMENTS 15

LITERATURE CITED 16

APPENDIX A 17

APPENDIX B. 30

APPENDIX C 46

LIST OF FIGURES

Figure 1: Location of Bison Control Area 3

Figure 2: General flight path of aerial surveys flown in the BCA during January-April 1994 5

Figure 3: Surveillance flight paths flown in the BCA late March 1994 6

Figure 4: General route of ground patrols in the BCA during January-March 1994 8

104-06696/

LIST OF TABLES

Table 1: Summary of aerial surveys, ground patrols, and observations in and near the Bison Control Area, January to April 1994 10

INTRODUCTION

Just over 70 years ago, a misguided management decision was made to transfer 6 000 plains bison (*Bison bison bison)* into Wood Buffalo National Park (WBNP), the protected range of the wood buffalo (*B. bison athabascae*). This decision resulted in the hybridization of the two subspecies and the introduction of two cattle diseases, tuberculosis and brucellosis into bison herds in the region (Gates et. al., 1992).

In 1963, wood bison were captured in the northwestern corner of WBNP, and transferred to Fort Smith, NWT where they were held for a few months. Eighteen bison were transported to Fort Providence and were released to the wild, founding the Mackenzie bison population. Before shipment, the bison were tested twice for brucellosis and tuberculosis, with negative results. The released bison have given rise to a healthy, vigorous herd which now numbers about 2 000 head, occupying an area of more than 8 000 km^2 (Gates et. al., 1992). Testing since 1986 indicates that this herd is disease-free; sera from 163 bison have tested negative for brucellosis and pathology/histopathology on 51 bison has indicated that tuberculosis is absent (Tessaro et. al., 1993). Hunters have not reported any lesions suspicious of either disease.

In 1965, twenty-three bison were captured and shipped to Elk Island National Park (EINP) in central Alberta. From those twenty-three bison, the EINP herd has grown to 500 head, and has provided brucellosis- and tuberculosis-free stock for several reintroduction projects, zoos and breeding herds. In 1980 and 1989, 28 and 12 bison, respectively, were released near Nahanni Butte, NWT. This herd now numbers about 60 head, and they are assumed to be disease-free (Gates et. al., 1992).

There is a threat to the disease-free status of the Mackenzie herd, Nahanni herd and an obstacle to reintroducing other healthy herds in the region. At the present time, brucellosis- and tuberculosis-infected herds exist in the vicinity of WBNP and the Slave River Lowlands. The issue of how to deal with the diseased bison was reviewed by a Bison Disease Task Force in 198[illegible], a federal Environmental Assessment and Review Process in 1990 and the Northern Buffalo Management Board (NBMB) in 1992-93. All indications point to no decisive action being taken to eliminate the diseases from the region.

The risk of infection of the Mackenzie and Nahanni bison herds from the diseased bison remains as a chronic management problem (Wobeser, 1992; FEARO, 1990). In 1987, the Government of the Northwest Territories implemented a program to reduce the risk of contact between infected and disease-free bison, (Gates and Gray, 1992; and Gates, et. al., 1992). This report summarizes the results of that program for the time period between January and April of 1994.

In December 1987, a Bison Control Area was established from which bison are excluded by active management. The BCA originally included lands south of the Mackenzie River, and north of the Mackenzie Highway between Mills Lake (near Fort Providence) and Hay River. The BCA was expanded in 1990 to include lands north of the NWT border and south of the Mackenzie River, lying between the Trout River in the west and the Buffalo River and western boundary of WBNP in the east, (Fig. 1). The objectives of this program are to remove any bison found in the BCA, and, ultimately, to prevent the establishment of bison herds or individuals in this

area. These objectives serve the goal of lowering the risk of contact between the healthy herds and the diseased bison in WBNP and the Slave River Lowlands.

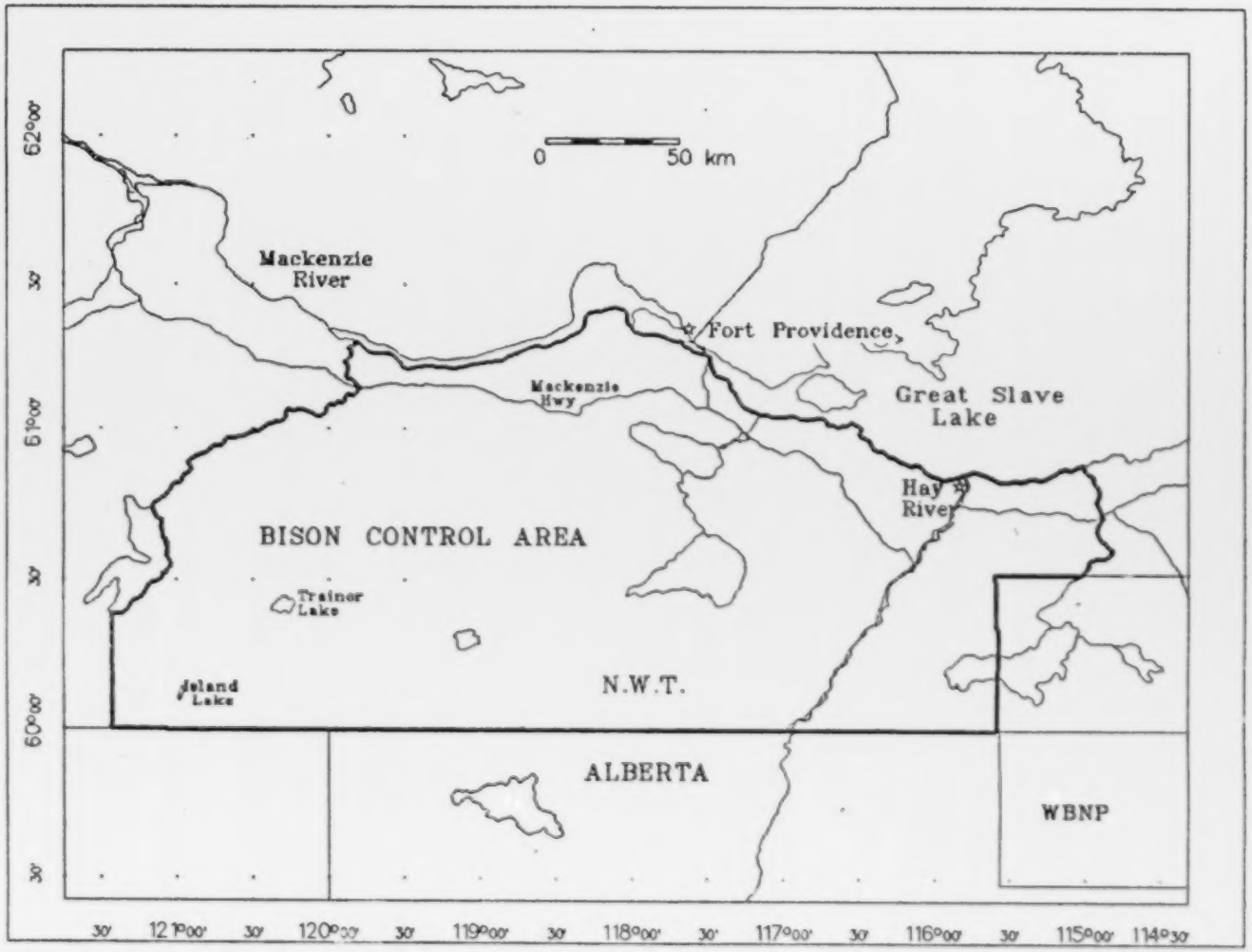


Figure 1. Location of Bison Control Area.

METHODS

Aerial Reconnaissance

Aerial reconnaissance was carried out from January to April, during the winter months when bison and bison tracks are the most visible due to lighting and snow conditions. Reconnaissance flights were concentrated along the northern boundary of the BCA, along the south shore of Great Slave Lake, in the Fort Providence area east to Hay River (Fig. 2). It is in this area where bison are most likely to cross into the BCA. Twelve aerial surveys were carried out between January 17 and April 27, (Appendix A).

A March-end survey was flown throughout all sections of the BCA that possibly contained suitable bison habitat, (Fig. 3). The area between the Mackenzie Highway and the south shoreline of the Mackenzie River/Great Slave Lake was systematically searched using transects spaced at 4.8 km intervals at flight level of 300 m. The remainder of the BCA was searched using transects spaced 9.6 km apart. The area west of 119° 30'W was flown in the form of spaghetti reconnaissance covering the lowland areas/river courses. Aerial reconnaissance was more intensive in the Island Lake and Trainor Lake areas, where HTA members of Trout Lake had reported seeing bison. All large mammals or tracks were reconnoitred.

Ground Surveillance

Ground surveillance was completed weekly by snowmobile. Personnel were hired

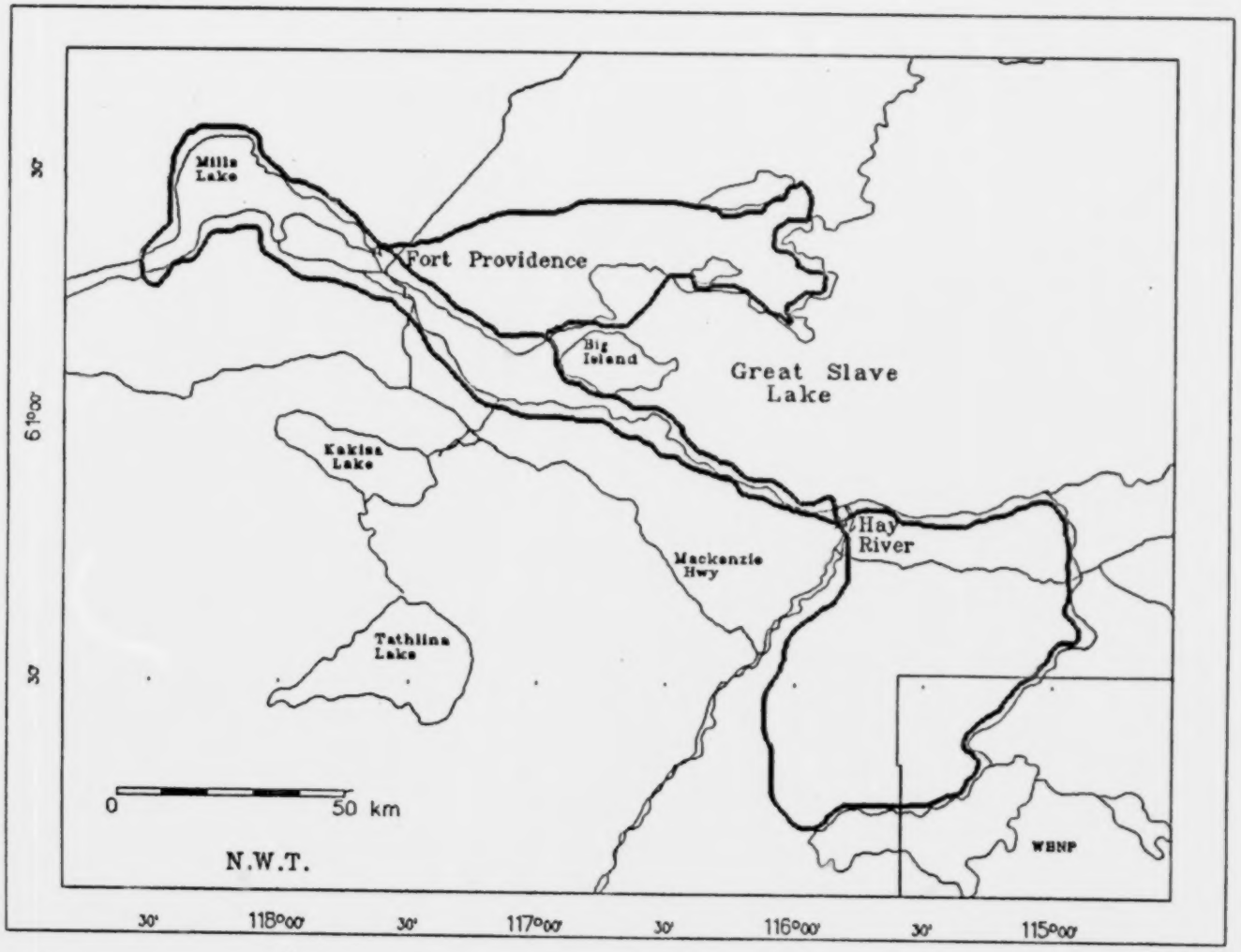


Figure 2. General flight path of aerial surveys flown in the BCA during January-April 1994.

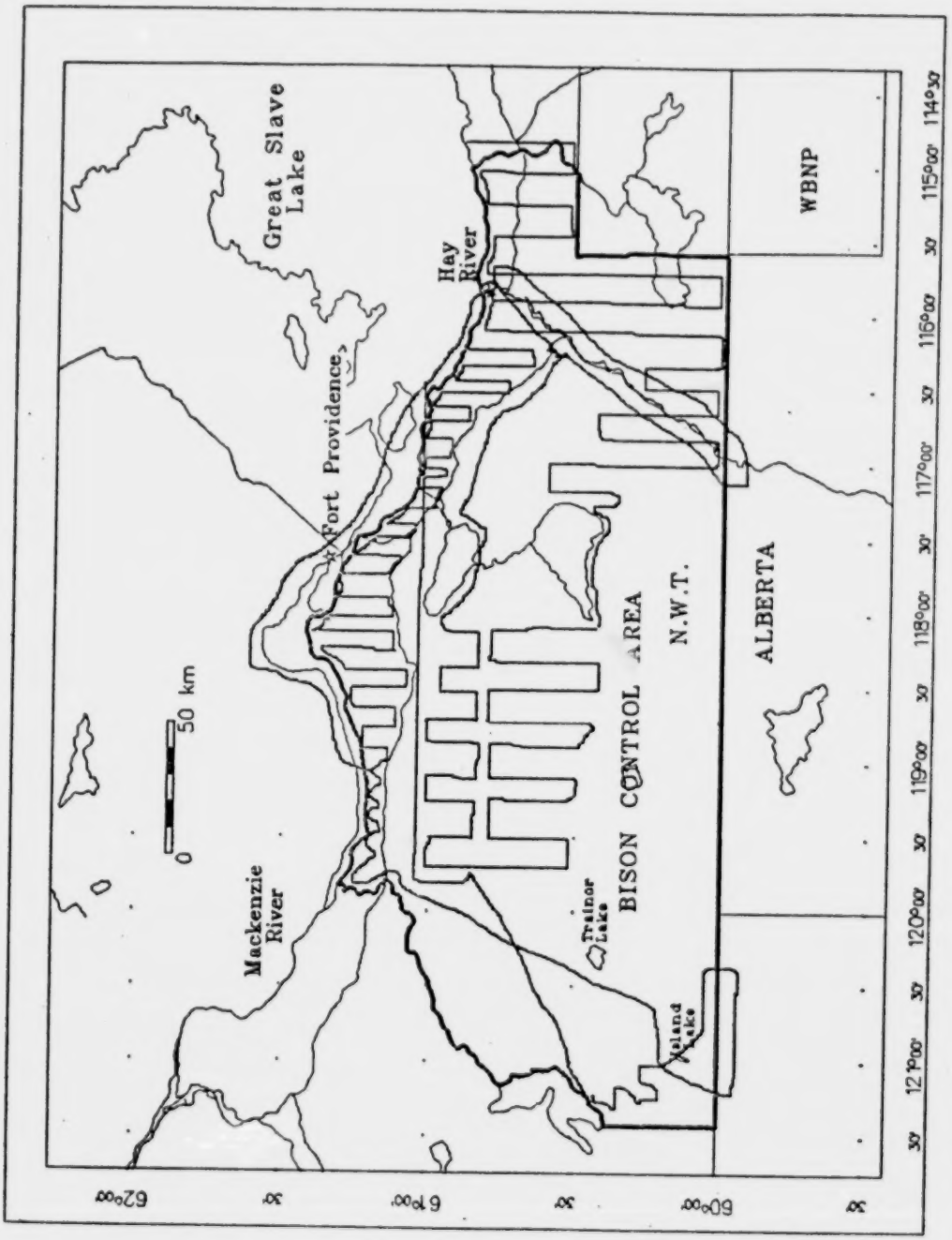


Figure 3. Surveillance flight paths flown in the BCA in late March 1994.

from Fort Providence and Hay River to conduct ground searches. Trips originated out of either Hay River or Fort Providence, and covered varying distances along the south shore of the Mackenzie River and Great Slave Lake (Fig. 4 and Appendix B). A total of 23 ground surveillance patrols, typically three days in length, were conducted during the period January 27-March 25, (Appendix B).

Public Involvement- Reported Sightings

Members of the public were asked to report any bison they saw in the BCA to the Department of Renewable Resources. To this end, three signs are posted along highways at various entry points into the BCA; at the NWT/Alberta border crossing on the Mackenzie Highway, near Fort Providence and at Buffalo River. Bison are designated as nuisance wildlife in the Bison Control Area under section 61 of the NWT Wildlife Regulations Act (GNWT, 1992). This regulation means that any bison sighted in the BCA may be shot by Renewable Resources staff, or by an eligible NWT hunter.

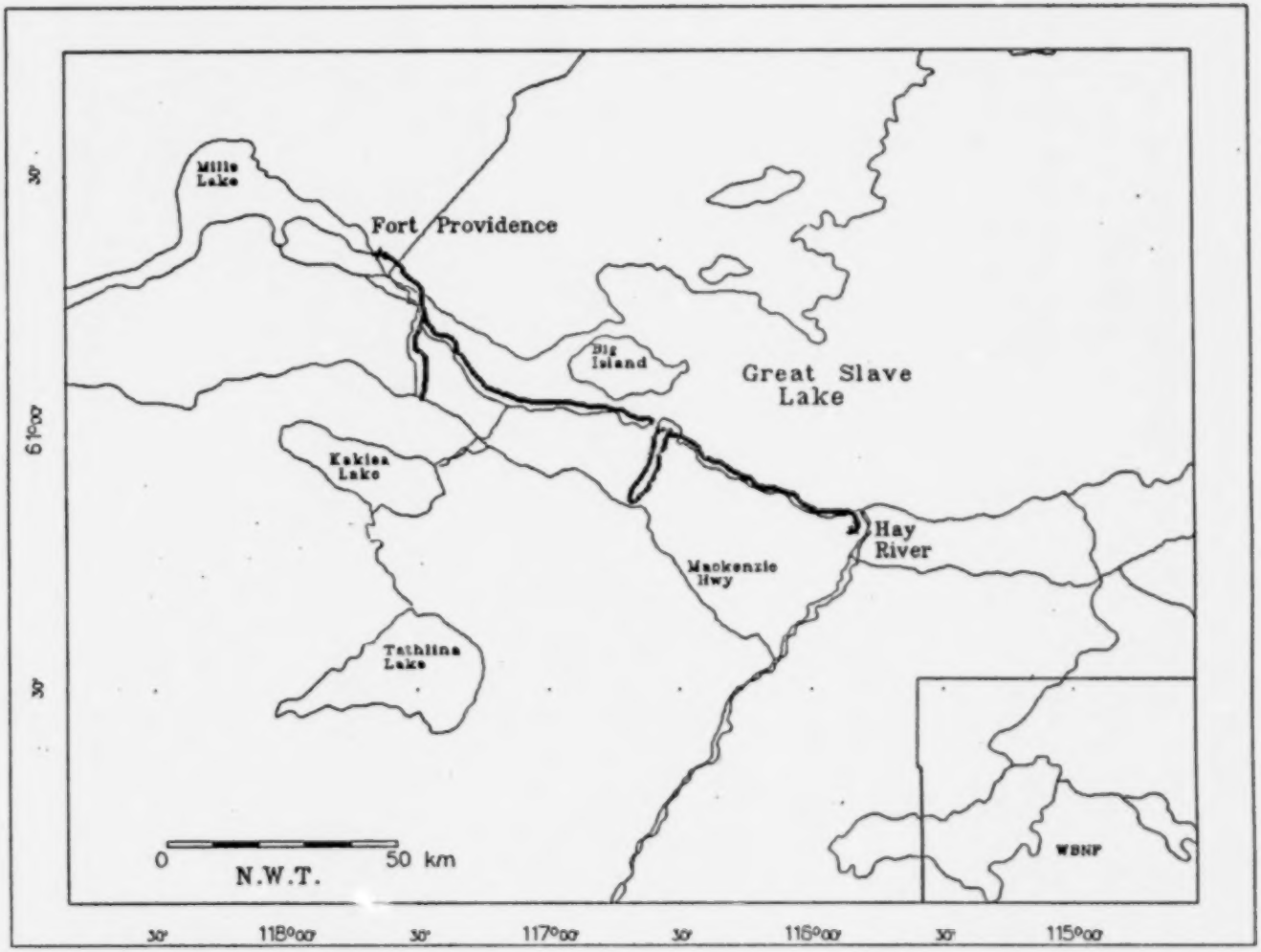


Figure 4. General route of ground patrols in the BCA during January-March 1994

RESULTS

Many large mammals were sighted during aerial surveys (Table 1 and Appendix A). Moose (n=79) were the most common, with caribou (n=13) being the next most common. Many wolves (n=39) were also sighted. Ground patrols typically provided reports of animal tracks only (no animals were actually sighted).

Bison were not detected in the Bison Control Area by aerial reconnaissance or ground surveillance during the winter of 1994. Many bison were observed along the north shore of Great Slave Lake, opposite the northern boundary of the BCA.

Bison were observed travelling south towards the BCA by members of the public on three occasions. On January 19, Audi Steinwand reported several bison moving south at the Fort Providence ferry crossing to Renewable Resources staff. A quick flight confirmed two groups of bison heading south on the ice, one group of eight cows and calves, and one more group of 10 cows and calves. The first group voluntarily turned north, while the second group had to be chased to the north shore. Further surveillance found three more bison, all bulls, just south of Big Island. The bulls were similarly turned northward by chasing them with the aircraft. A total of 65 bison were sighted along the north shore of the Mackenzie River that day, (Appendix C).

On January 20, Bernie Bonnetrouge reported bison crossing the Mackenzie River at the Fort Providence ferry crossing. The bison were located the next day by Renewable Resources staff just northeast of the crossing. They did not move into the BCA, (Appendix C).

Bison sightings were also reported by HTA members of Trout Lake in the Island

Table 1: Summary of aerial surveys, ground patrols and observations in and near the Bison Control Area, Jan-April 1994

Aerial or Ground Patrol	Date	Trip Origin	Coverage	Observations
Aerial	Jan. 17	Hay River	MBS (between Mills Lk and Hay River)	*113 bison, N shore, Mills Lk * 25 bison, N shore, ferry crossing * 90 bison, N shore Beaver Lk * 1 bison, W shore, Deep Bay * 2 bison, S shore of Big Island * 10 moose, various locations
Aerial (call-out flight due to sighting)	Jan. 19	Ft Providence	Ft Providence to Big Island	* 3 separate bison groups chased back towards N shore, Mack R
Aerial (call-out flight due to sighting)	Jan 21	Ft Providence	Dory Point area	* 4 bison, east of ice crossing
Aerial	Jan 23	Ft Providence	MBS (Ft Prov to Big I to Falaise Lk)	* 48 bison, 5 moose, Willow Pt * 96 bison, North Channel * 64 bison, Deep Bay and Slave Bay *176 bison, 2 moose, Sulphur Bay * 20 bison, Falaise Lk
Aerial	Jan 26	Hay River	MBS (between Mills Lk and Hay River)	* 10 caribou, S shore of Gr Slave Lk * 11 bison, N shore, Beaver Lk * 6 moose, Big Island
Ground	Jan 27	Ft Providence	Ft Prov to Hay R	
Aerial (call-out flight due to sighting)	Jan 29	Hay River	Hay River to ferry crossing, along N and S shorelines	* 2 moose near Pte Desmarais * 3 caribou, S shore North Channel * 23 bison vicinity Point Sarristo * 2 moose N shore North Channel * 3 bison, 4 wolves, North Channel * 2 moose NW shore Big Island
Aerial	Feb 02	Ft Providence	MBS (Mills Lk to Big I)	*53 bison, 5 moose, N shore Mills L * 41 bison, Point Sarristo area * 15 bison, N shore, ferry crossing * 5 moose, North Channel * 2 moose, Kakisa River
Aerial	Feb 07	Hay River	Hay River to Buffalo R and Buffalo Lk	* 2 moose, Fish Pt * 3 moose, N shore Buffalo Lk * 2 wolves, NW shore Buffalo Lk * 2 moose, Yates River * 5 moose, Whitesand River
Aerial	Feb 08	Hay River	Hay River to Trout R	* 1 moose, North Channel * 26 bison, North Channel
Ground	Feb 08-11	Ft Providence	Ft Prov S along Mack Hwy	
Ground	Feb 11-13	Hay River	Hay River to Burnt Point	
Ground	Feb 14-18	Ft Providence	Ft Providence to Hay River	
Ground	Feb 15-17	Hay River	Hay River to Burnt Point	
Aerial	Feb 17	Ft Providence	MBS (Ft Prov to Big I to Falaise Lk)	* 45 bison, Beaver Lk area * 6 bison, N shore, Ft Prov

Table 1, continued

Aerial or Ground Patrol	Date	Trip Origin	Coverage	Observations
Aerial	Feb 17 (continued)			• 118 bison, Boulogne Lk • 13 bison, Moose Pt • 46 bison, N shore, Slave Bay • 94 bison, N shore, Sulphur Bay • 13 bison, N of Ft Providence • 1 moose, N shore, Slave Bay • 2 wolves, S shore Slave Bay
Ground	Feb 18-25	Ft Providence	Ft Prov to Beaver Lk	
Ground	Feb 22-24	Hay River	Hay River to Ft Prov	
Ground	Feb 23-25	Ft Providence	Ft Prov to Pte Desmarais	
Ground	Feb28- March 4	Ft Providence	Ft Prov to Hay River	
Aerial	March 01	Ft Providence	MBS (Mills Lk to Big I)	• 69 bison, Mills Lk/ Horn R area • 5 wolves, 3 horse, Mills Lk • 11 moose, Mills Lk/Horn R area • 70 bison, Mission Prairie • 25 bison near Ft Providence • 75 bison, 3 moose, Beaver Lake • 7 bison, 1 moose, North Channel • 5 moose, Big Island
Ground	March 01-03	Hay River	Hay River to Kakisa R	
Ground	March 01-03	Ft Providence	Ft Prov to South Channel	
Ground	March 07-10	Ft Providence	Ft Prov to Kakisa River	
Ground	March 07-10	Hay River	Hay River to Burnt Pt	
Ground	March 14-18	Ft Providence	Ft Prov to South Channel	
Ground	March 17-19	Hay River	Hay River to Burnt Pt	
Aerial	March 20	Hay River	Hay River to Pres-qu'ile Pt to Buffalo Lk	• 5 wolves, Nyarling R • 1 moose, Copp R
Aerial	March 21	Fort Providence	MBS (Ft Prov to Big I to Falaise Lk)	• 79 bison, N shore Mackenzie R • 98 bison, Boulogne Lk • 18 bison, Moose Pt • 6 bison, Slave Bay Area •132 bison, 20 wolves, Sulphur Bay • 1 moose, Big Island • 1 moose, Kakisa R
Ground	March 22-24	Ft Providence	Ft Prov to Pte Desmarais	
Ground	March 23-25	Hay River	Hay River to Beaver Lk	
Aerial	April 08	Fort Providence	MBS (Ft Prov to Falaise Lk	• 10 bison, Ft Prov •107 bison, Beaver Lk • 14 bison, 1 wolf, Moose Point • 33 bison, Slave Bay •131 bison, Windy Bay • 49 bison, Boulogne Lk
Aerial	April 27	Ft Providence	Mills Lk to Hay River	• 20 bison, Ft Providence • 13 bison, Beaver Lk • 1 bison, 1 moose, Mills Lk

Lake and Trainor Lake areas. Upon investigation, sunken, enlarged tracks in the snow were found in the Island Lake area and two moose were seen at nearby locations.

Ground patrols reported bison tracks near Pointe Desmarais, but further investigation could not confirm the presence of bison.

DISCUSSION

Routine surveillance of the Bison Control Area in early 1994 focussed on the northern boundary of the BCA particularly between the Fort Providence area and Hay River, and in the Mackenzie Bison Sanctuary. Limited surveillance effort was allocated to the remainder of the Bison Control Area.

Monitoring of the northern boundary for bison provides a limited view of the BCA and results in the chance that bison could be missed that may have crossed into the BCA between flights or ground patrols or that might have come from other areas. Bison are highly mobile animals, and predictions cannot be made as to when and where they might cross into the BCA, nor from which direction they might come. For example, bison might emigrate from WBNP or from northern Alberta as well as from the Mackenzie population. In the absence of reconnaissance of the low-risk areas, it is not possible to know that bison are not present. Negative information is useful as it demonstrates that bison are not in the BCA; this should not be assumed.

A March-end survey was flown through all sections of the BCA that possibly contained suitable bison habitat using parallel flight paths. Bison were not found in the BCA during this survey. Nevertheless, surveys such as this one should be conducted to confirm that bison are not present in the BCA.

The importance of public support cannot be over-emphasized. All bison that were observed moving towards the BCA were reported by the public, and were not detected by aerial or ground surveys. These sightings were reported by members of the public despite the fact there was even less advertising as compared to previous years.

There were no newspaper advertisements or brochures published in 1993/1994. Public cooperation assists significantly in maintaining the disease-free status of herds in the NWT.

In 1993, a free-ranging herd of wood bison was established in the Hay-Zama area in northern Alberta. This population is at risk of being infected. Border patrols are necessary to ensure that these animals do not venture into the BCA. It is important to obtain information from Alberta Fish and Wildlife staff about the distribution and status of this herd.

Regular ground patrols in the high risk area provide an additional opportunity to detect bison. Weekly ground patrols should be continued out of Fort Providence and Hay River.

We recommend the following improvements to surveillance of the BCA:

1. Aerial reconnaissance in the Mackenzie Bison Sanctuary is not necessary, except to keep track of the distribution of bison along the north shore of the Mackenzie River, between Fort Providence and Big Island.
2. Reconnaissance of the high probability area south of the Mackenzie River should include routine flights as far south as Highway 1. Flights along the south shore of the Mackenzie River and Great Slave Lake should be more frequent.
3. There should be at least two surveillance flights in the winter covering the western boundary of Wood Buffalo National Park and the Alberta border.
4. The public relations and information program should be embellished. There is a

requirement for more written advertisements in brochures and in newspapers. A brochure and other written material should be made available at the Visitor Centre at the NWT/Alberta border.

5. Information on bison distribution should be solicited from the public in Trout Lake, NWT, Assumption, Alberta, Indian Cabins, Alberta, and Alberta Forestry and Fish and Wildlife staff in High Level, Fort Vermillion and Fort McMurray.

ACKNOWLEDGEMENTS

We would like to thank Tom Chowns and Evelyn Krutko for assisting us in conducting aerial surveys throughout the winter of 1994. We would also like to thank Daniel Squirrel, Walter Landry, Jim and Ken Thomas, and Albert Bonnetrouge for conducting the ground patrols.

LITERATURE CITED

Bison Disease Task Force. 1988. Evaluation of brucellosis and tuberculosis in northern Canada. Agriculture Canada and Parks Canada, Ottawa.

EARP. 1990. Northern diseased bison: report of the environmental assessment panel. Federal Environmental Assessment Review Office, Ottawa.

Gates, C.C., B. Elkin, L. Kearey, and T. Chowns. 1992. Surveillance of the bison free management area, Jan-Jun 1992. NWT Dept of Renewable Resources Manuscript Report No. 65.

Gates, C.C. and S. Gray. 1992. Surveillance of the bison free management area, NWT. NWT Dept. of Renewable Resources Manuscript Report No. 50.

Gates, C.C., T. Chowns, and H. Reynolds. 1992. Wood buffalo at the crossroads. In Foster, J., D. Harrison, I.S. McLaren and B. Champion, (eds.), Buffalo, Univ. of Alberta Press: pp. 137-165.

Government of the Northwest Territories. Dept. of Renewable Resources: NWT Wildlife Act. Section 61 (August 10, 1992), Yellowknife.

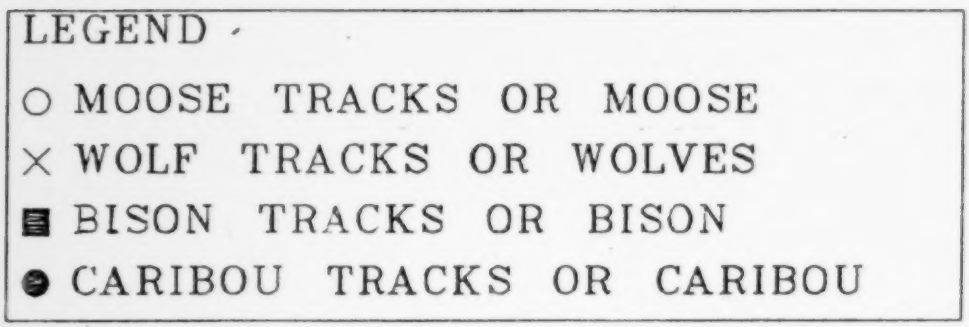
Tessaro, S.V., C.C. Gates, and L.B. Forbes. 1993. The brucellosis and tuberculosis status of wood bison in the Mackenzie Bison Sanctuary, NWT Canada. *Can J Vet Res*: pp. 231-235.

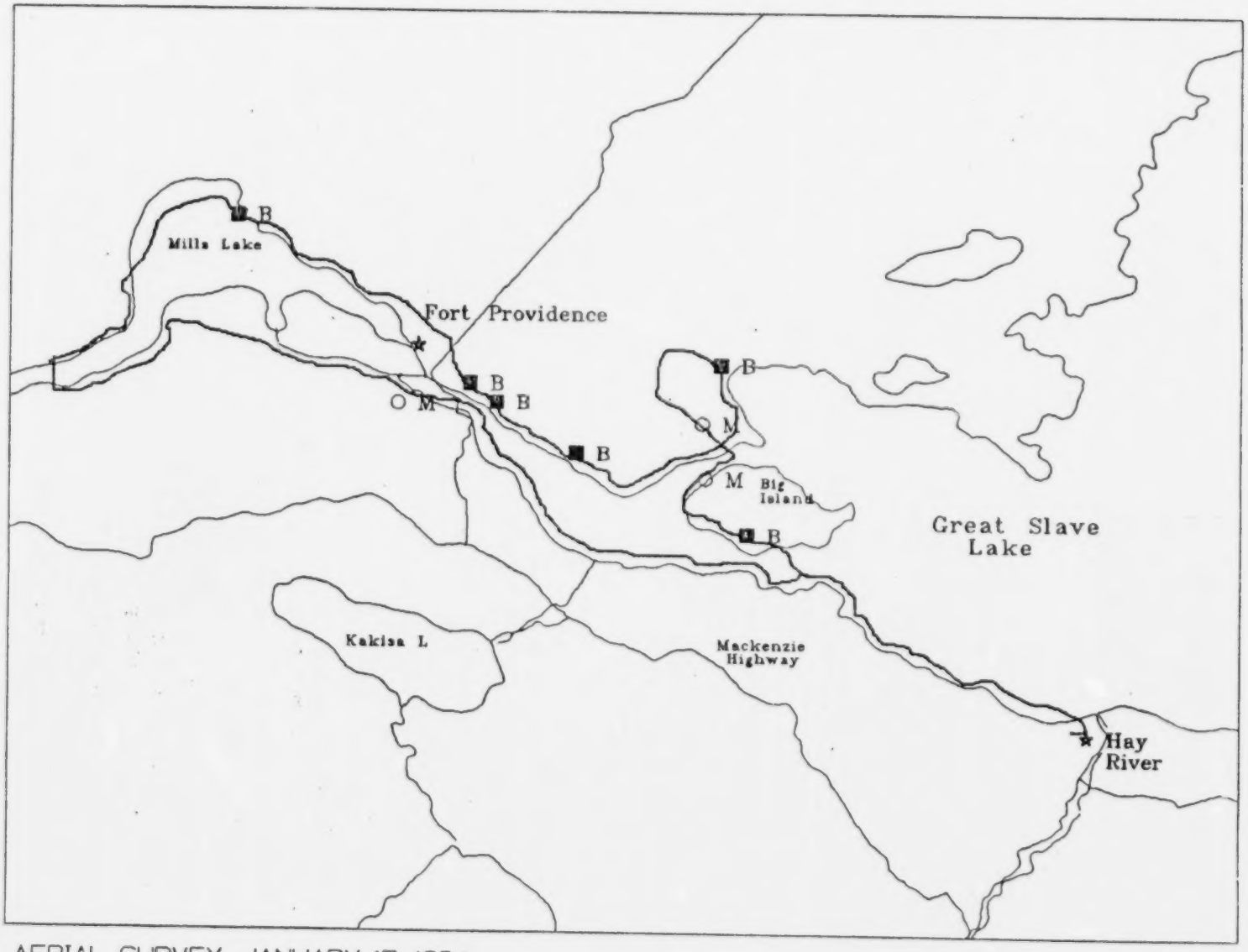
Wobeser, G. 1992. Disease in northern bison: what to do? A personal perspective. in Foster, J., D. Harrison, I.S. McLaren and B. Champion, (eds.), Buffalo, Univ. of Alberta Press: pp. 179-188.

APPENDIX A:

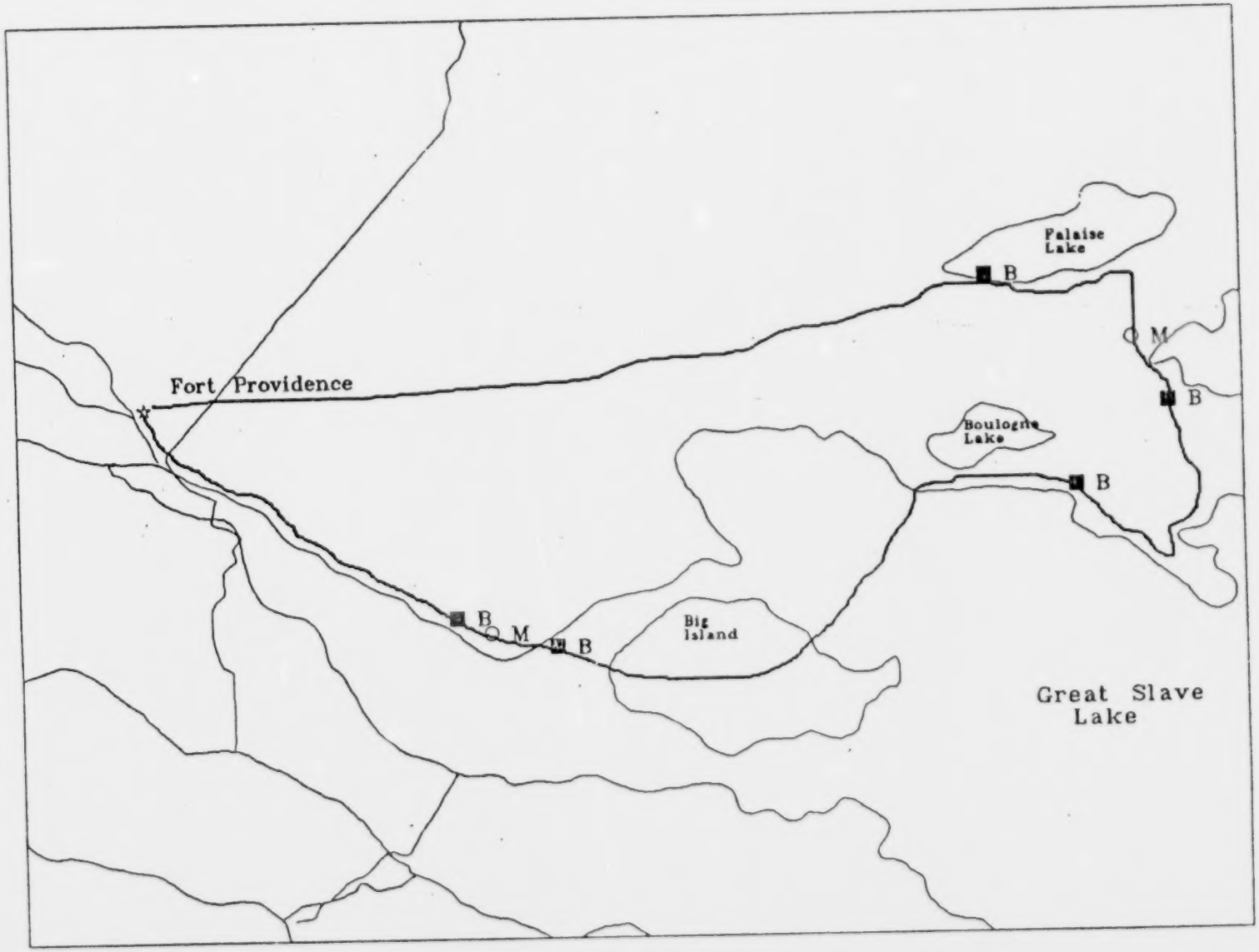
Aerial Surveys: Flight Paths and Animal Sightings

January-April 1994

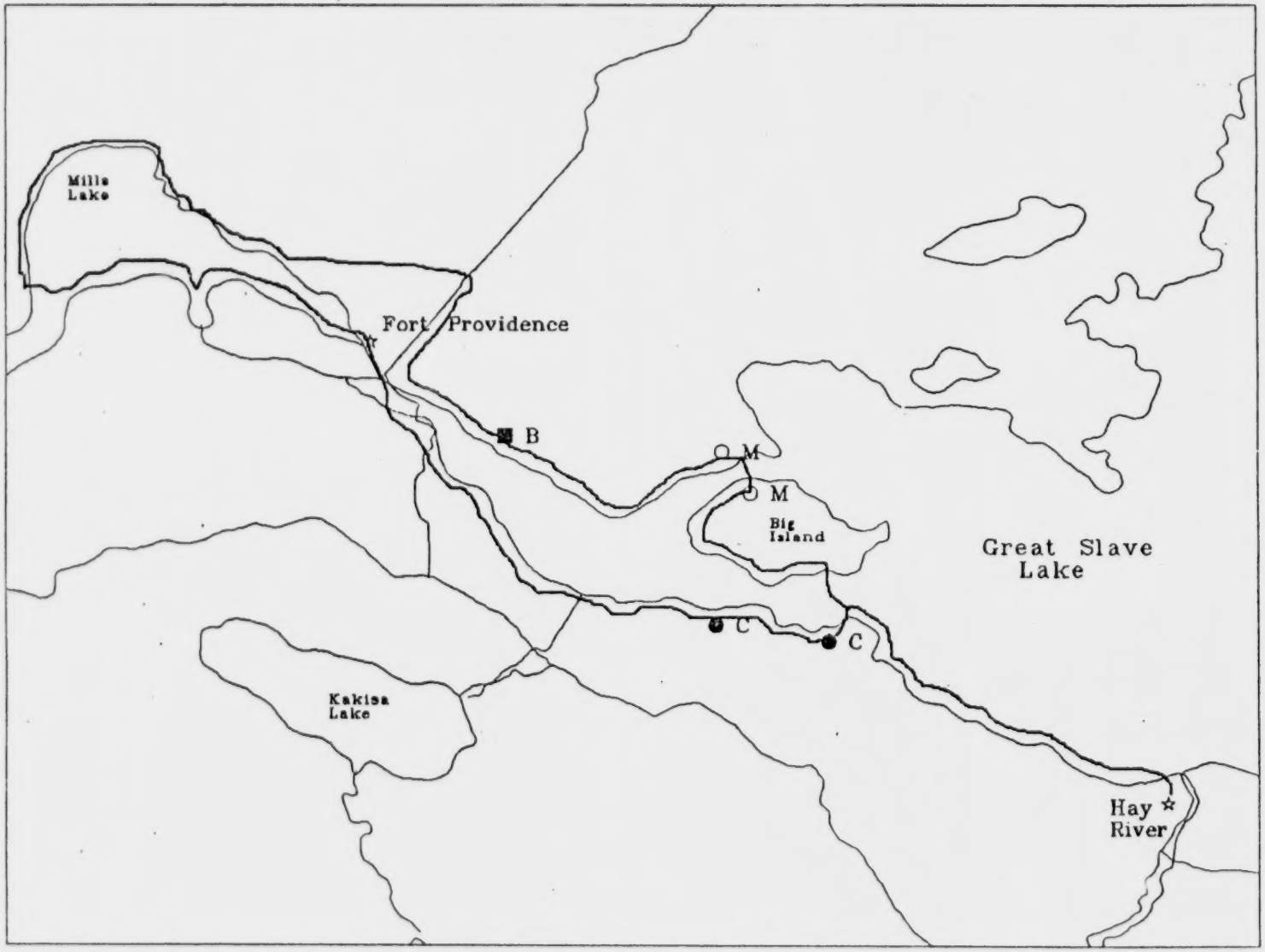




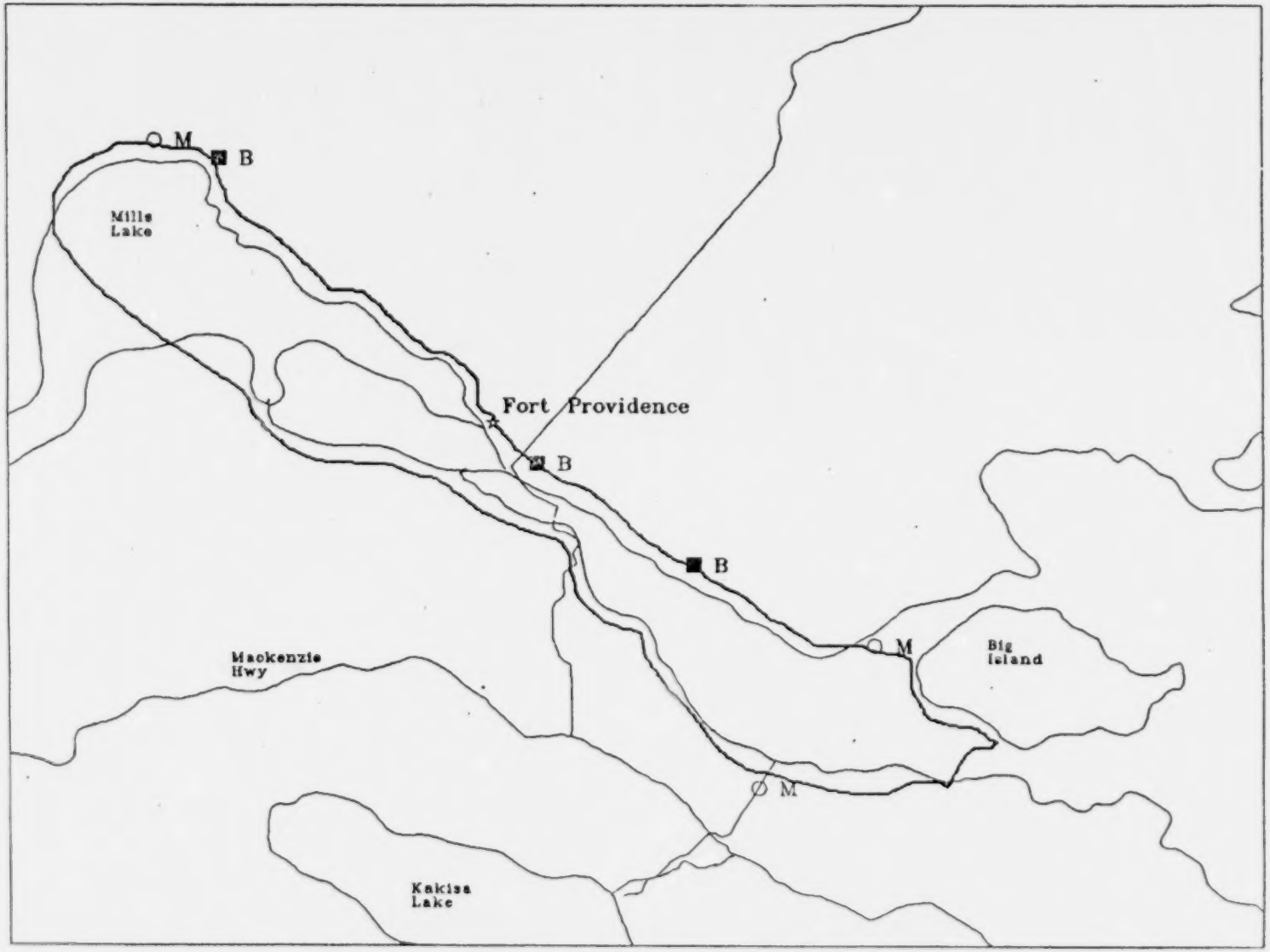
AERIAL SURVEY: JANUARY 17, 1994



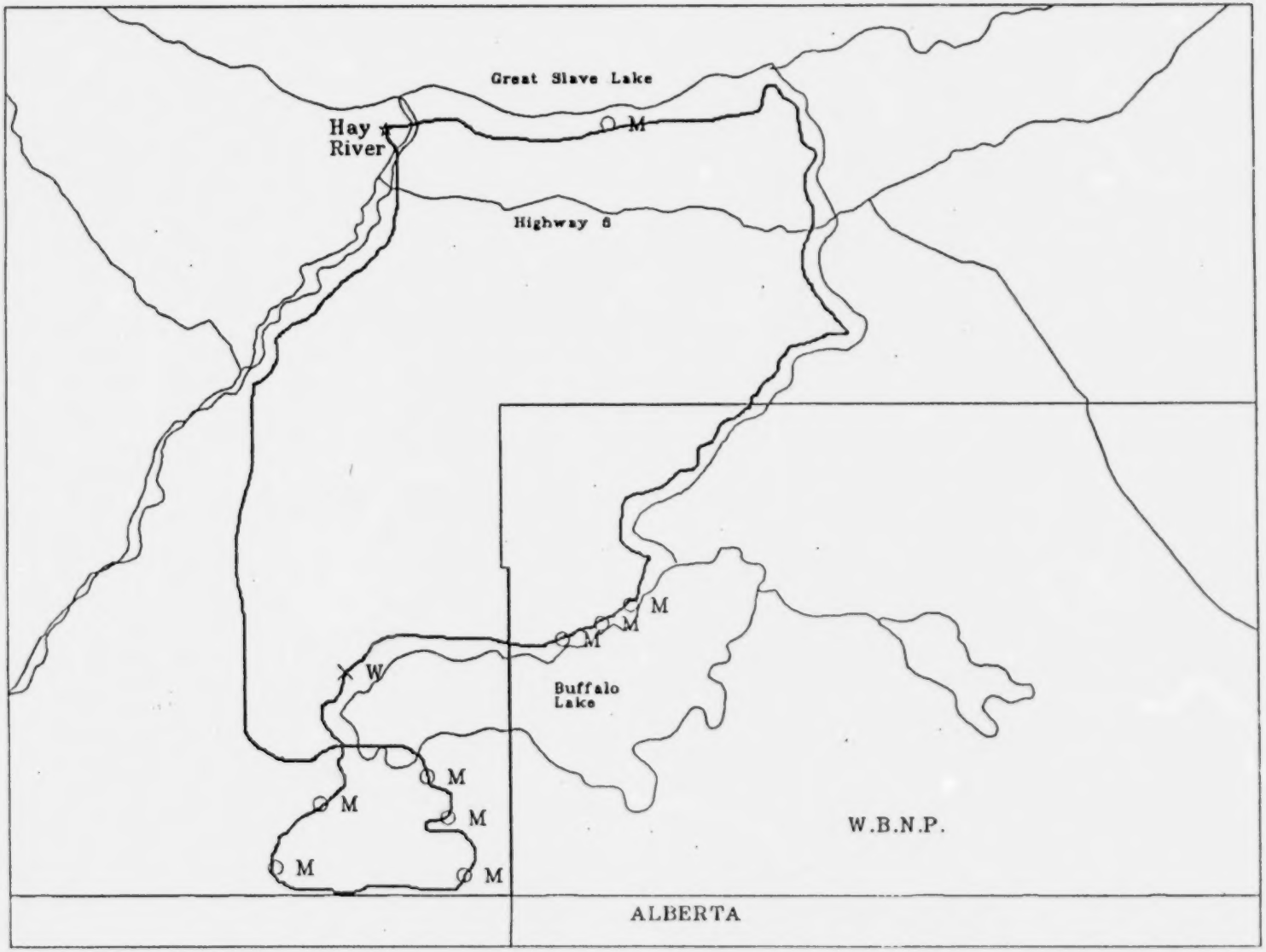
AERIAL SURVEY: JANUARY 23, 1994



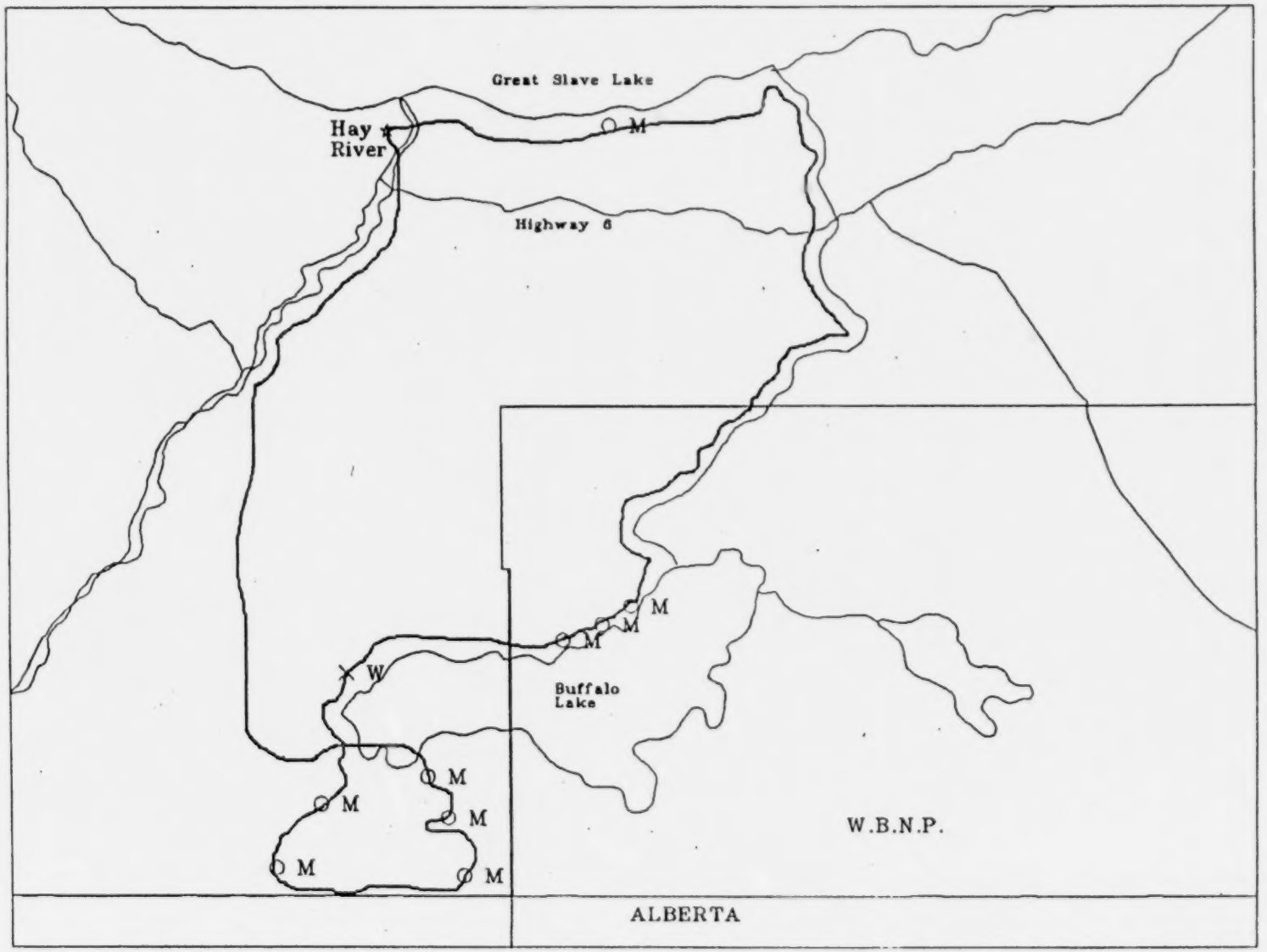
AERIAL SURVEY: JANUARY 26, 1994



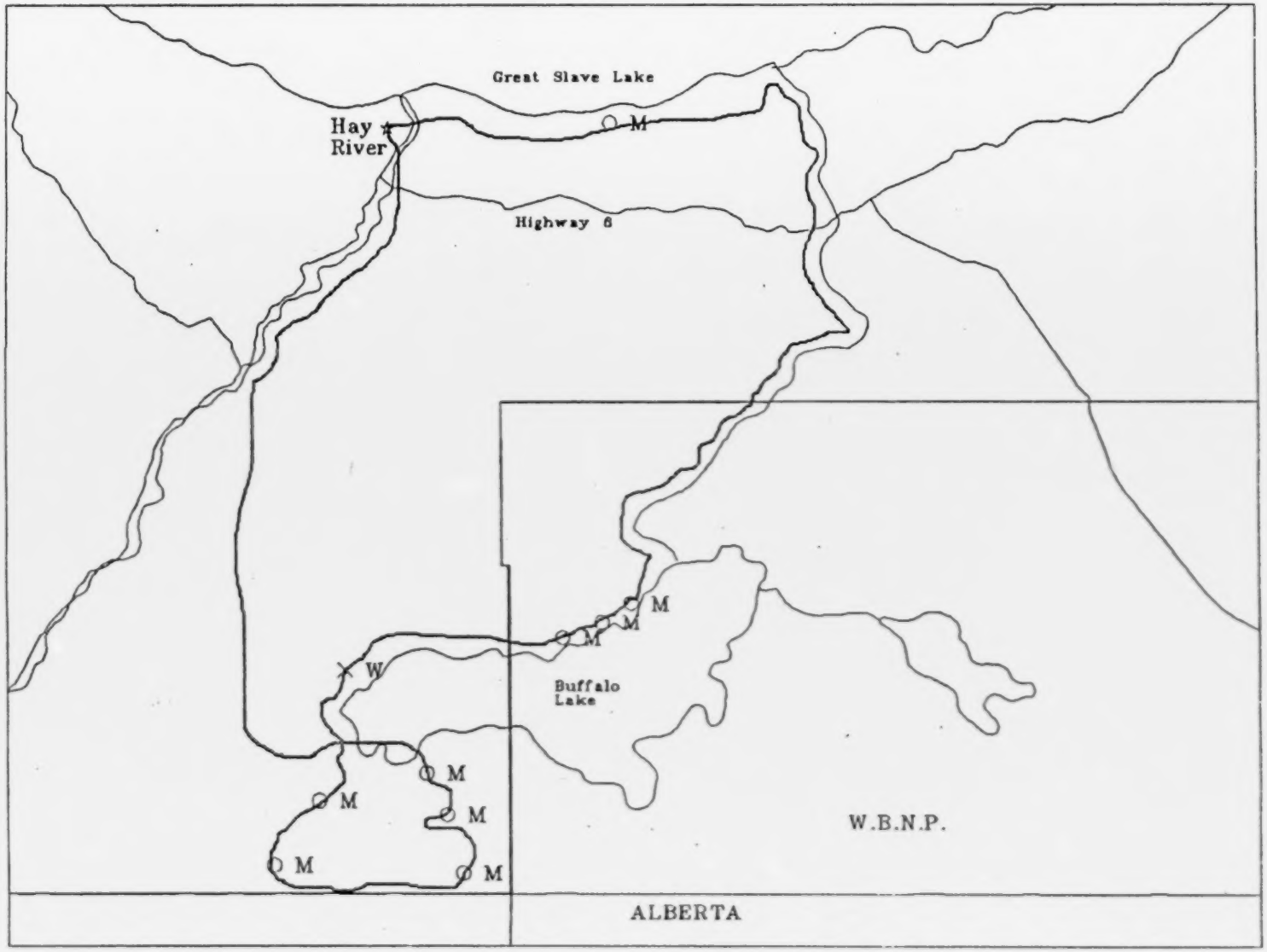
AERIAL SURVEY: FEBRUARY 02, 1994



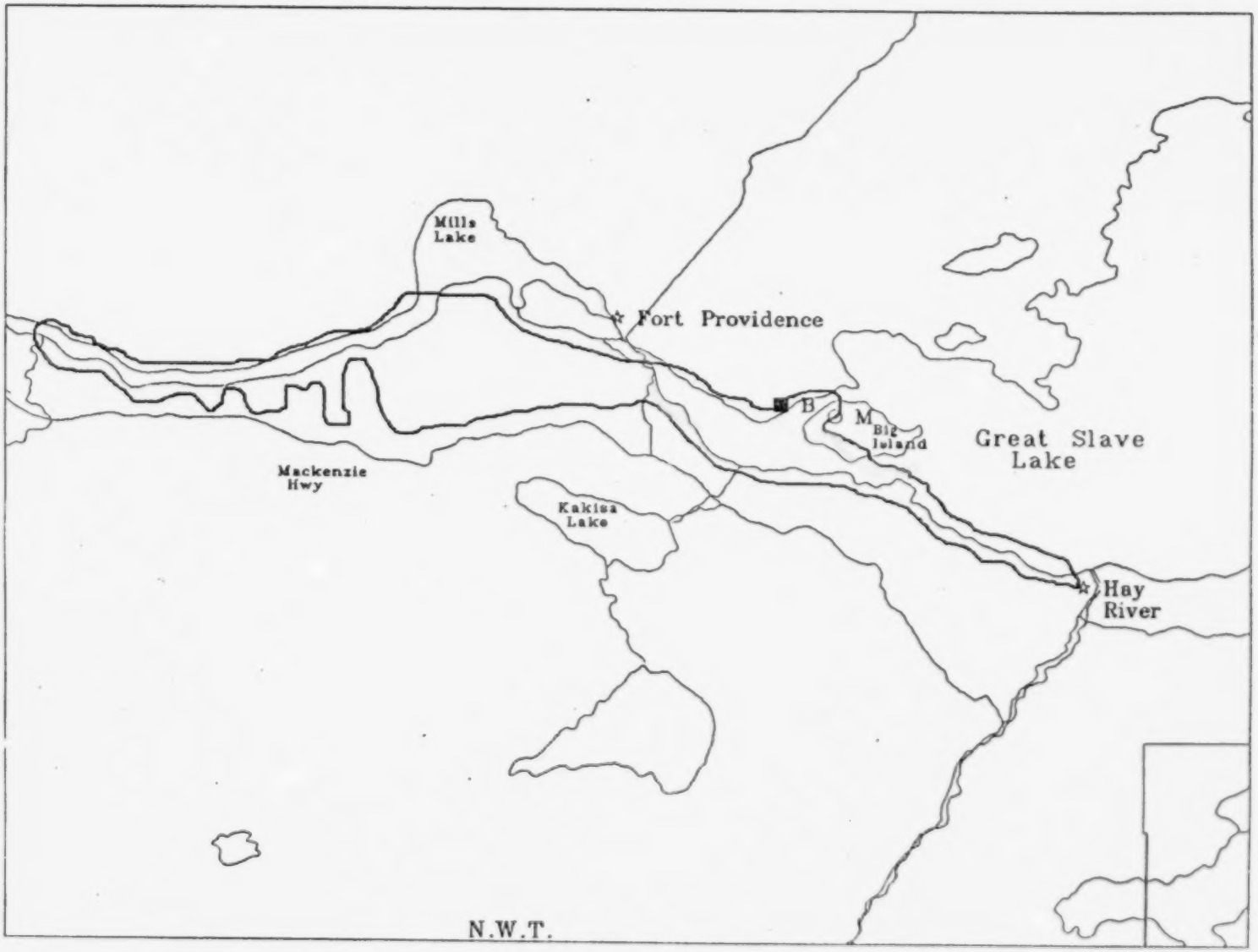
AERIAL SURVEY: FEBRUARY 07. 1994



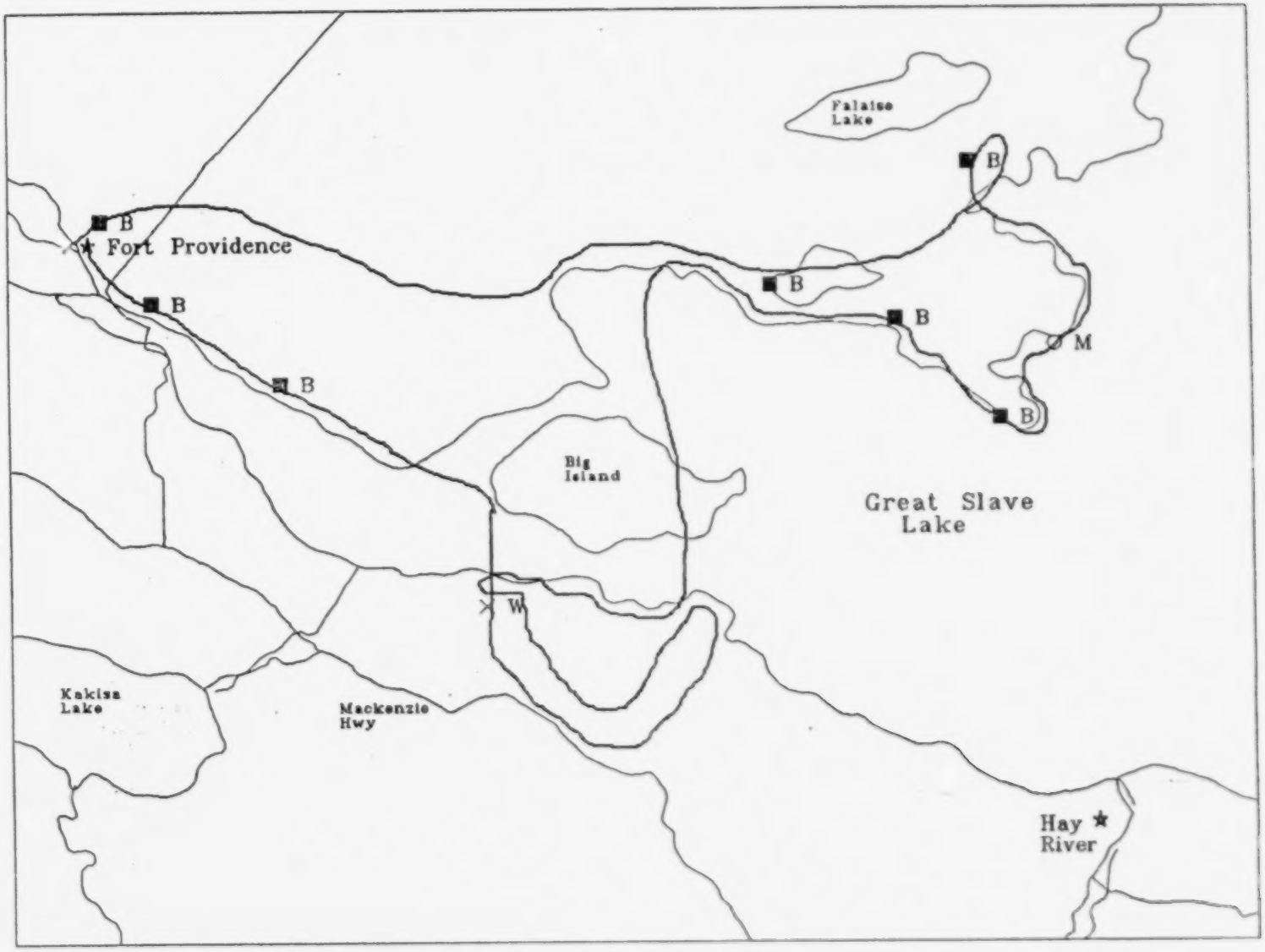
AERIAL SURVEY: FEBRUARY 07. 1994



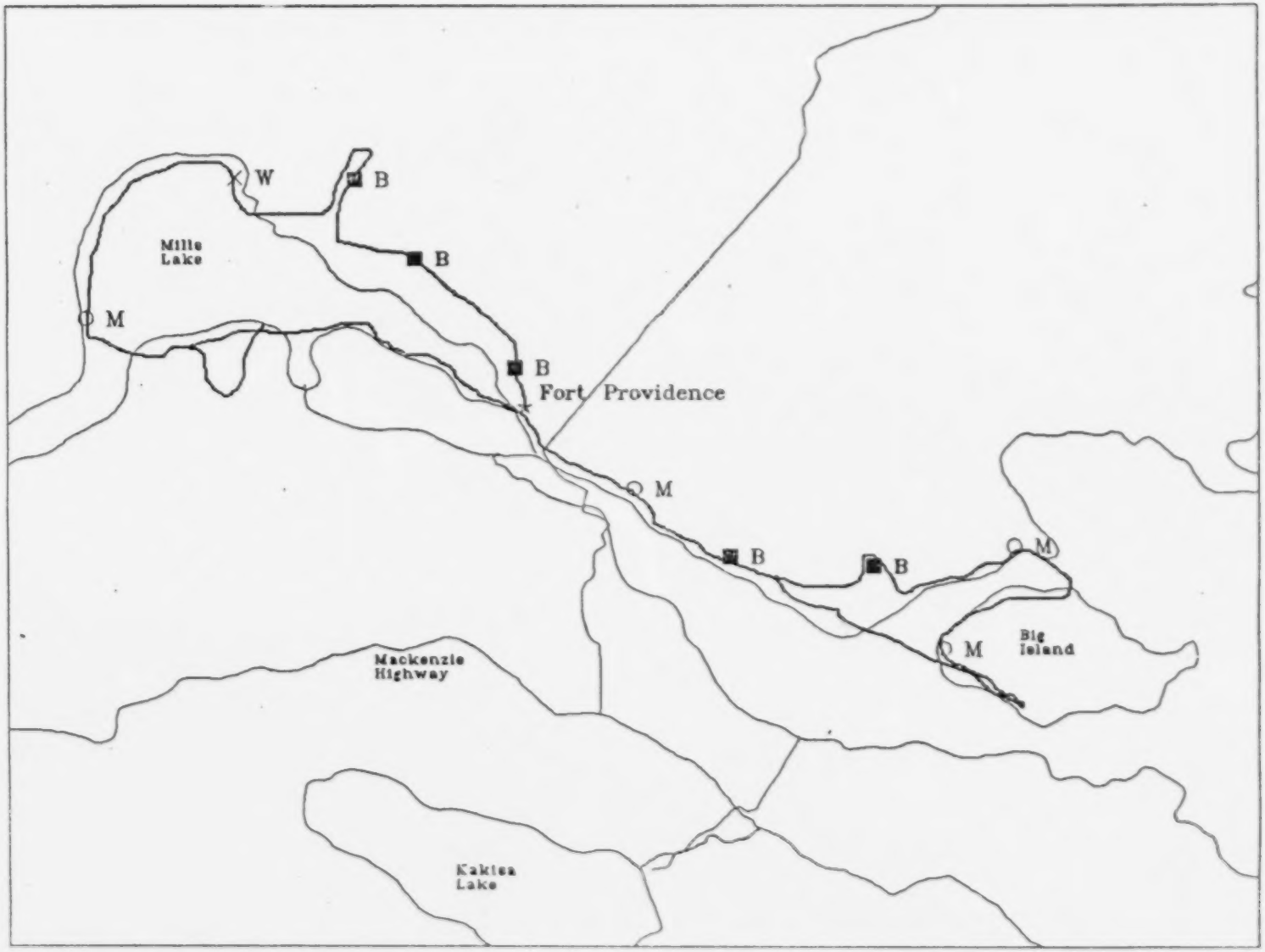
AERIAL SURVEY: FEBRUARY 07. 1994



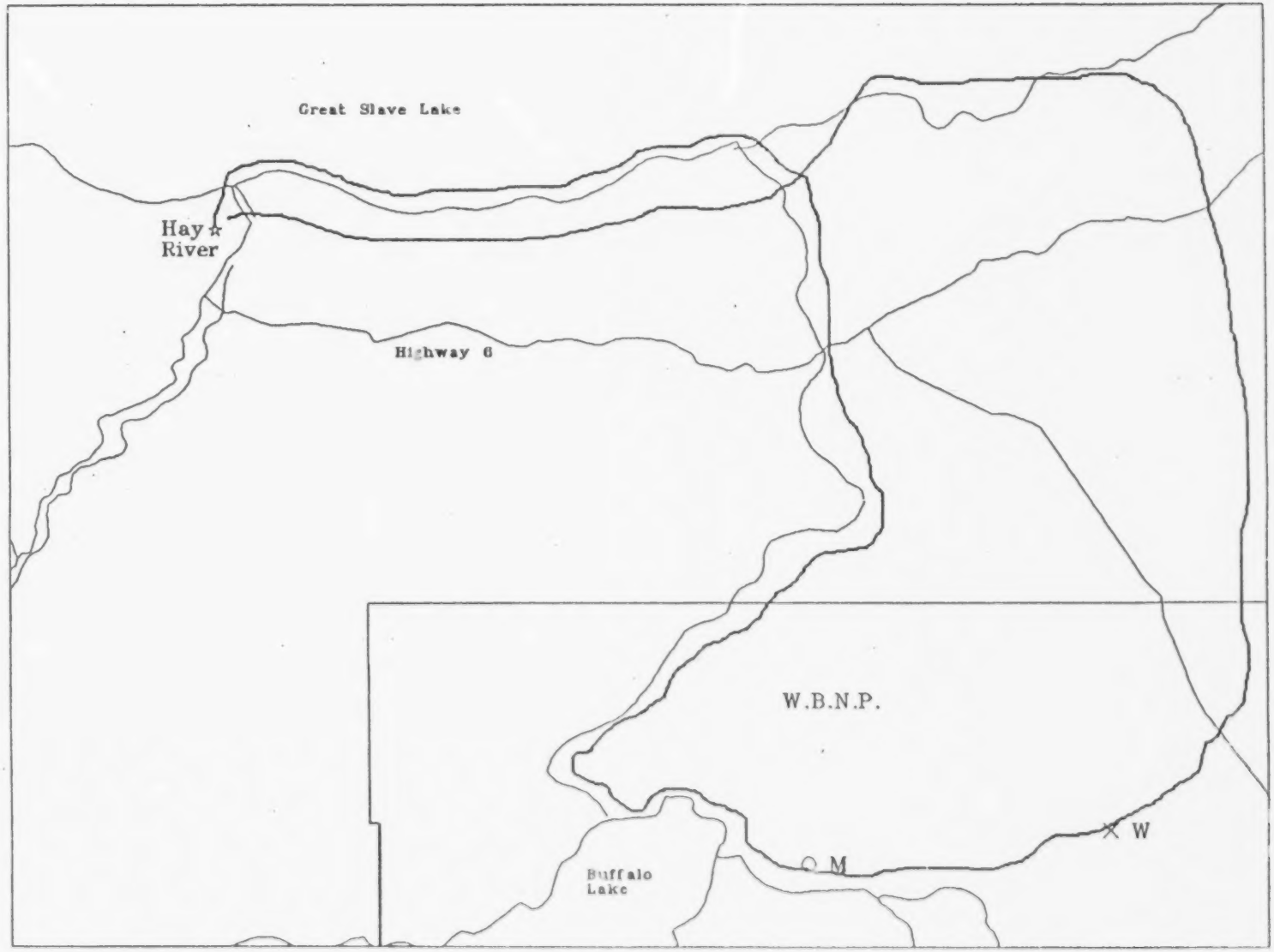
AERIAL SURVEY: FEBRUARY 08, 1994



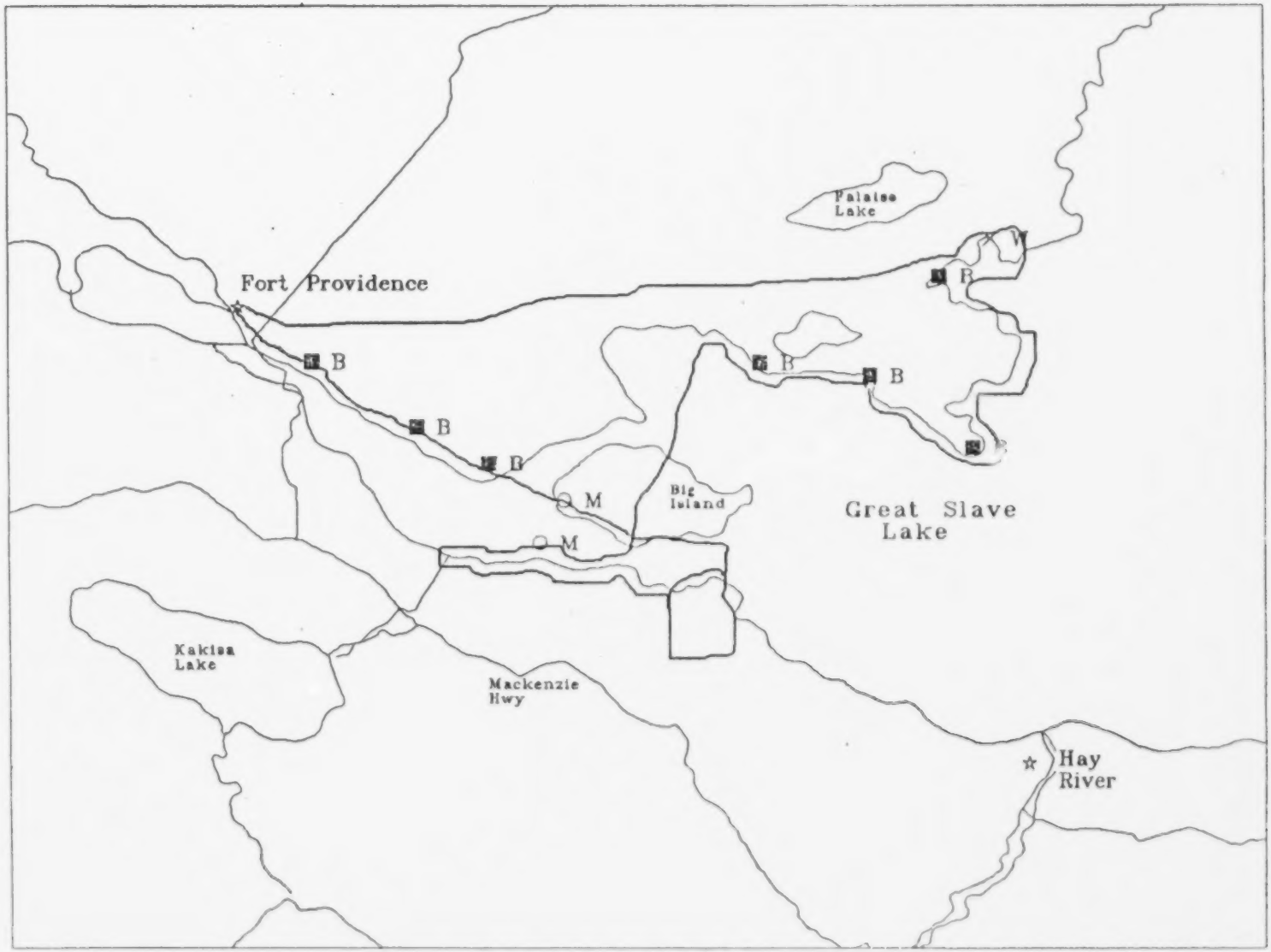
AERIAL SURVEY: FEBRUARY 17, 1994



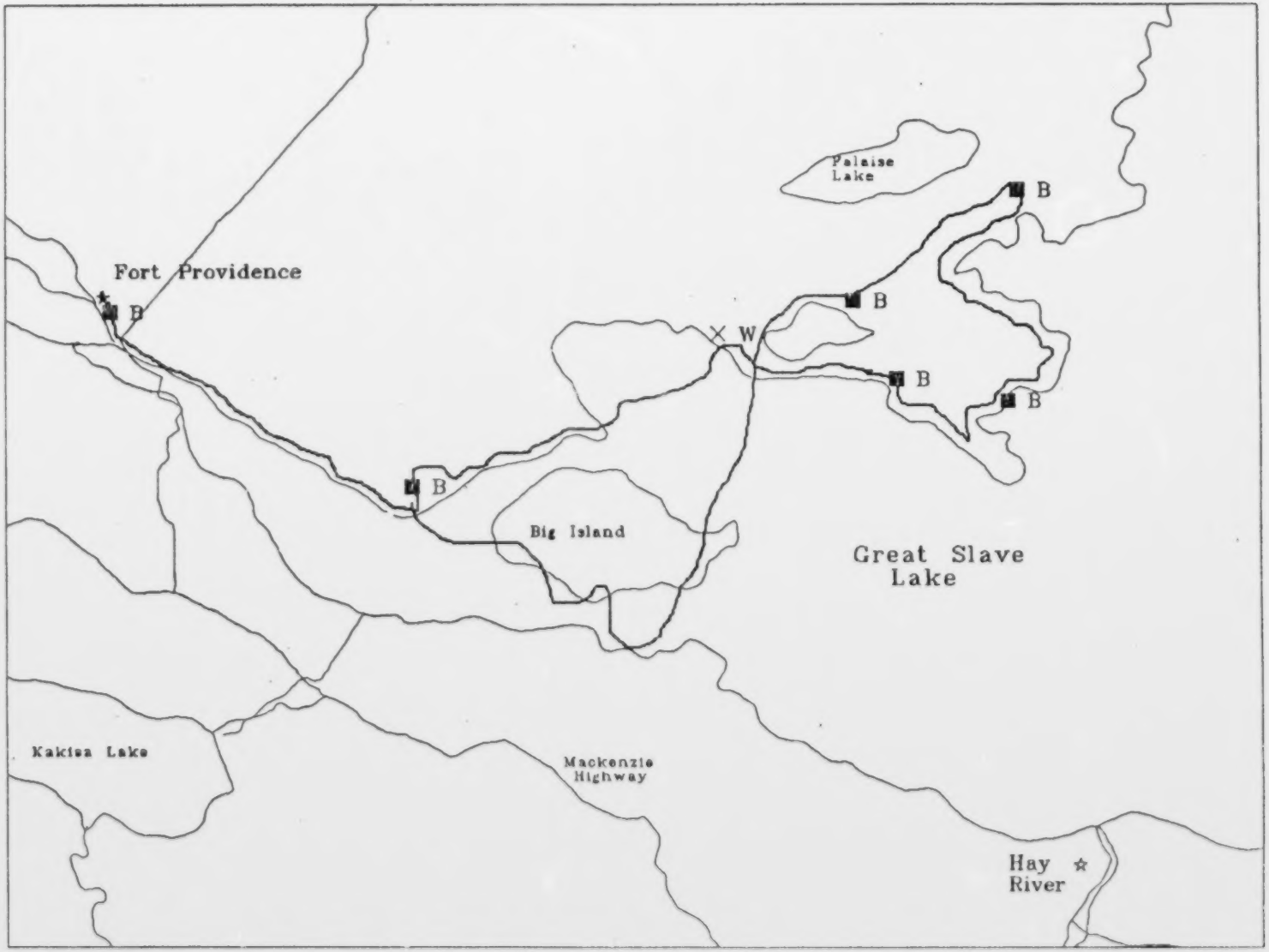
AERIAL SURVEY: MARCH 01, 1994



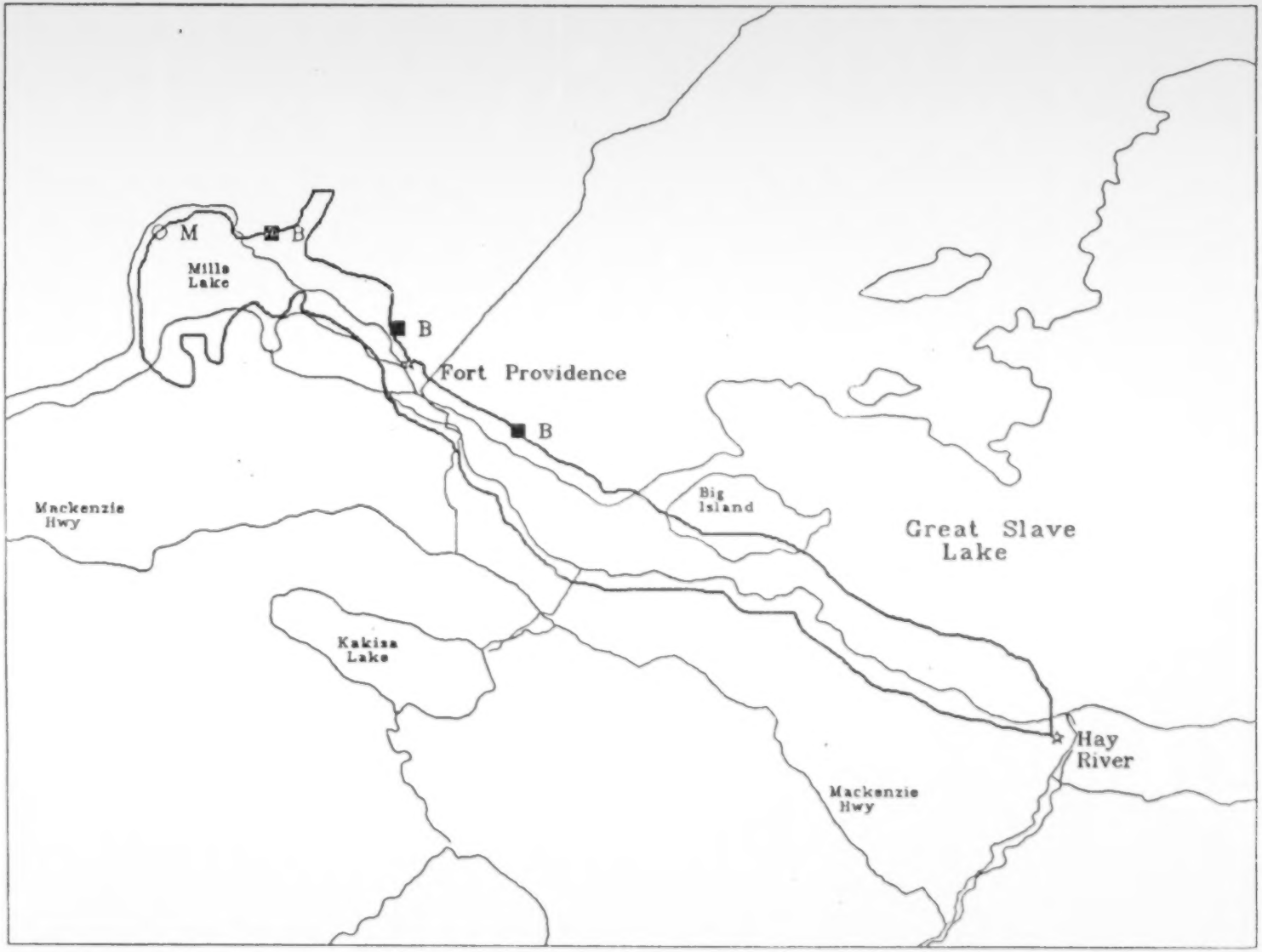
AERIAL SURVEY: MARCH 20. 1994



AERIAL SURVEY: MARCH 21, 1994



AERIAL SURVEY: APRIL 08, 1994

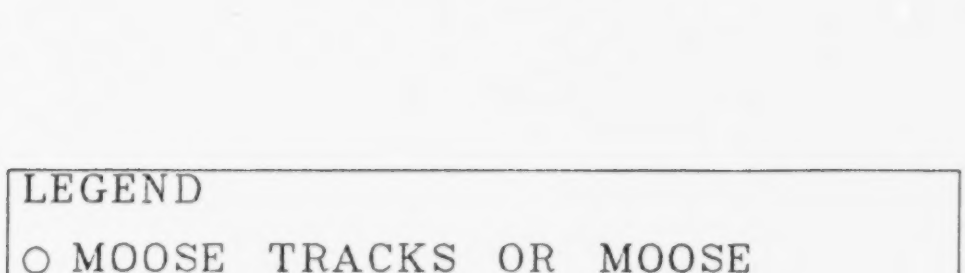


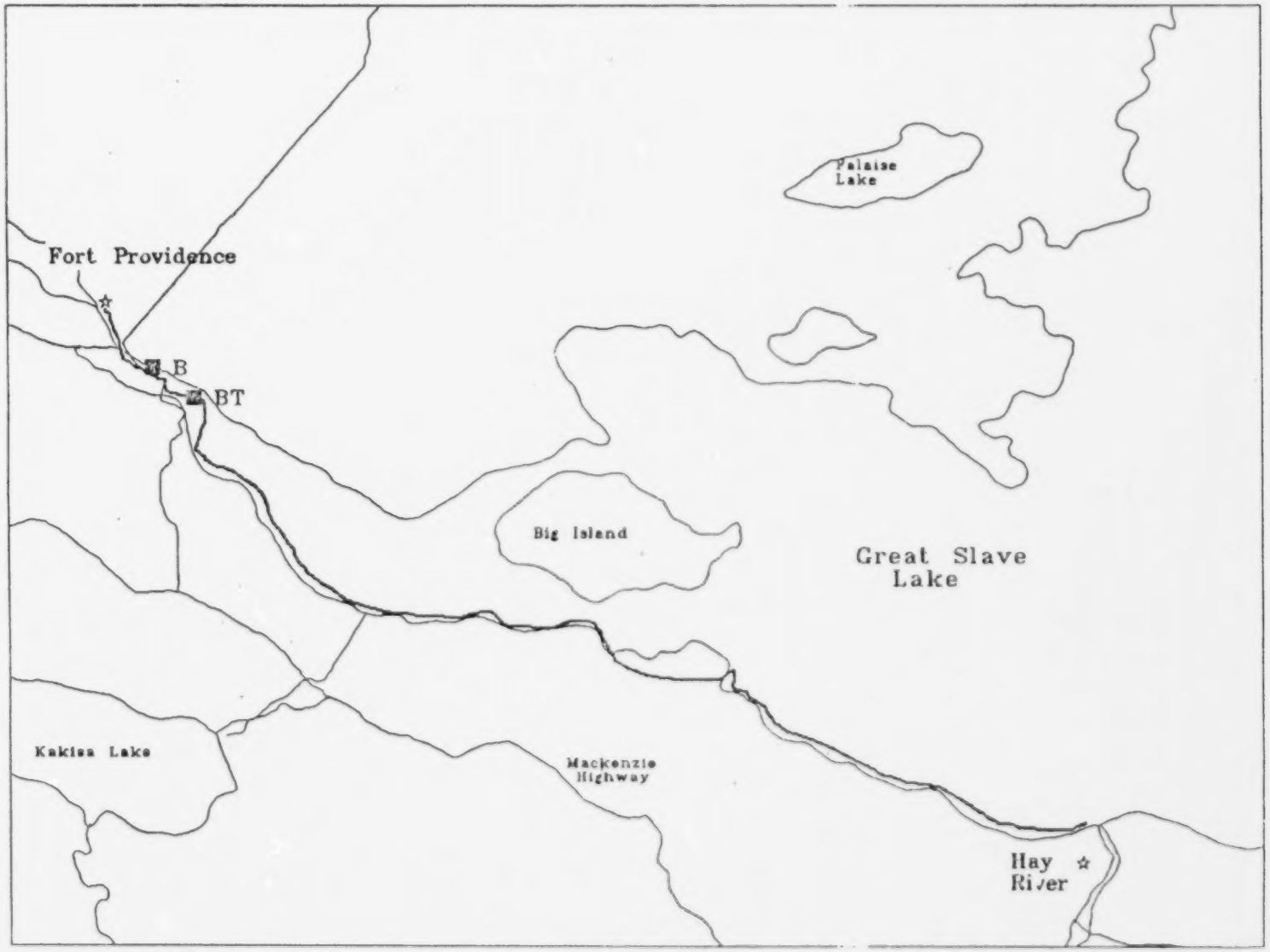
AERIAL SURVEY: APRIL 27, 1994

APPENDIX B:

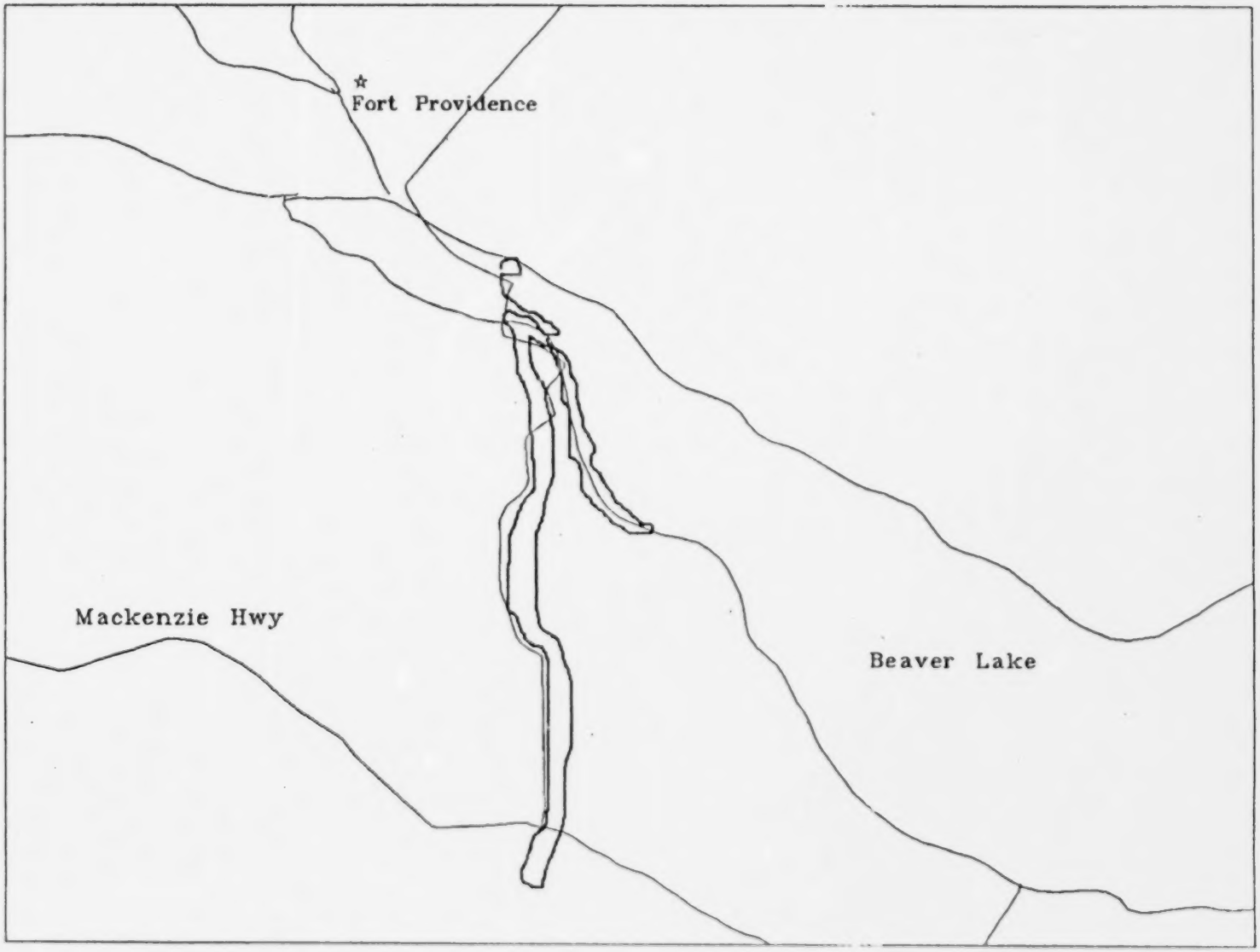
Ground Surveys: Routes and Animal Sightings

January-March 1994

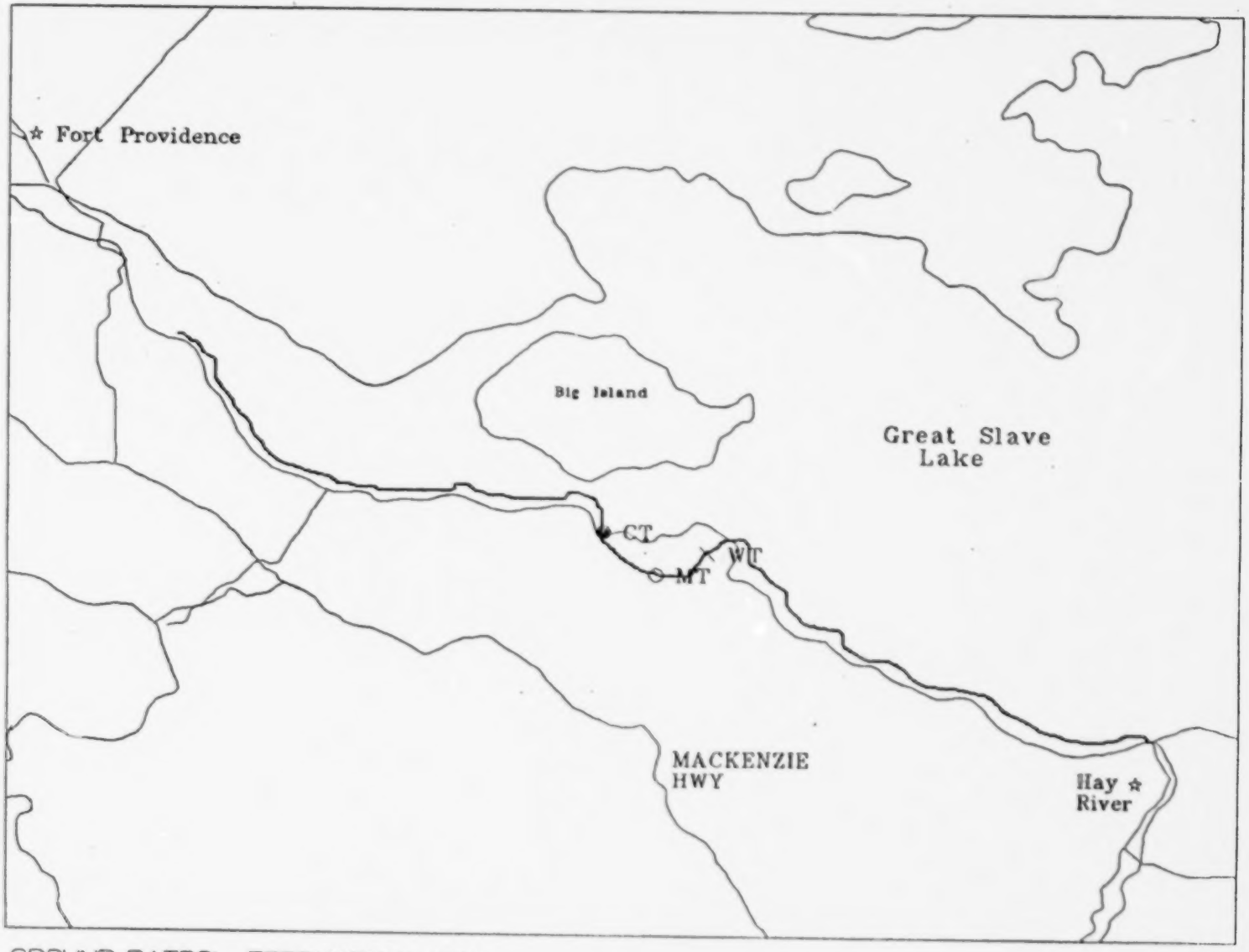




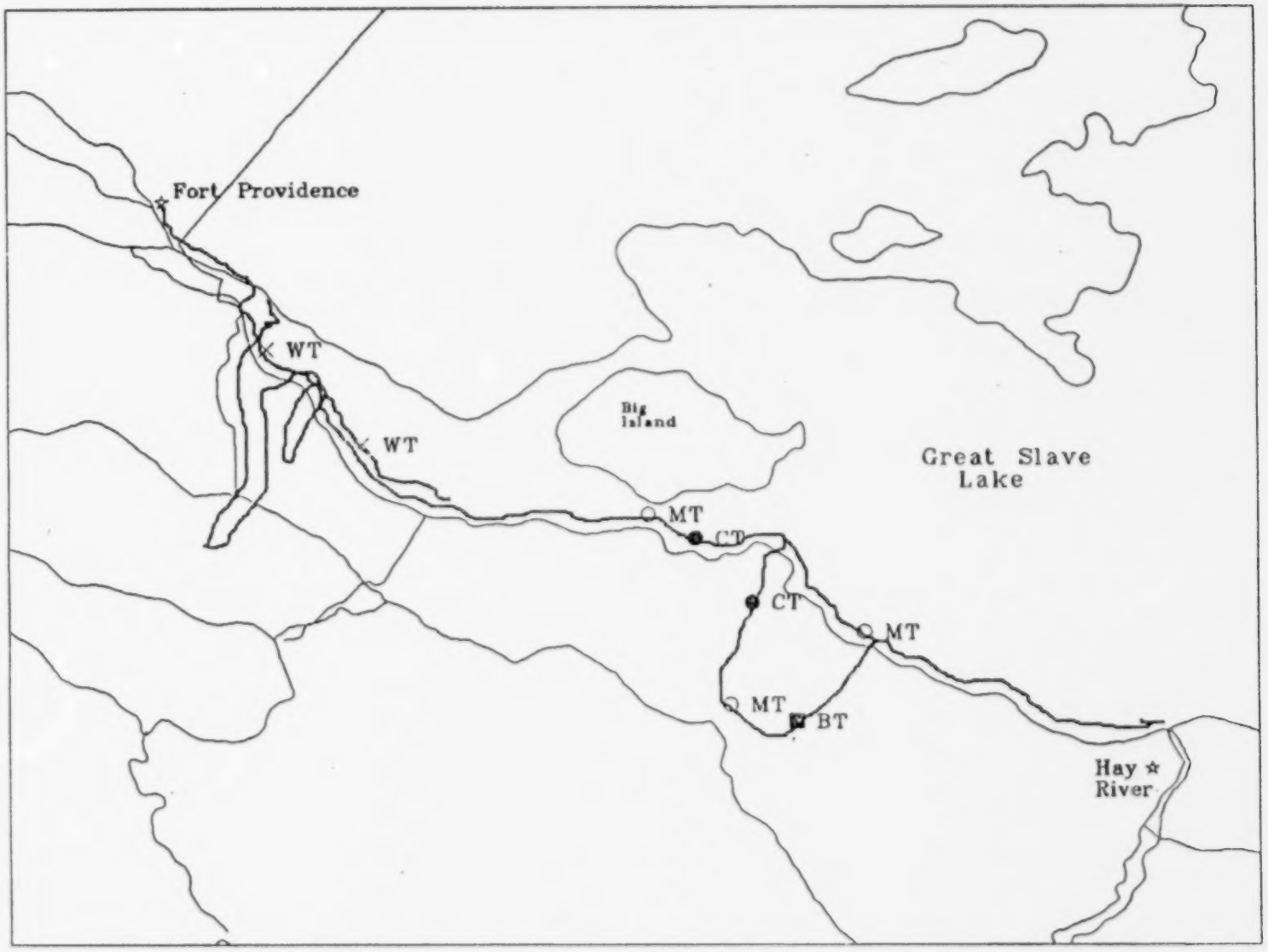
GROUND PATROL: JANUARY 27, 1994



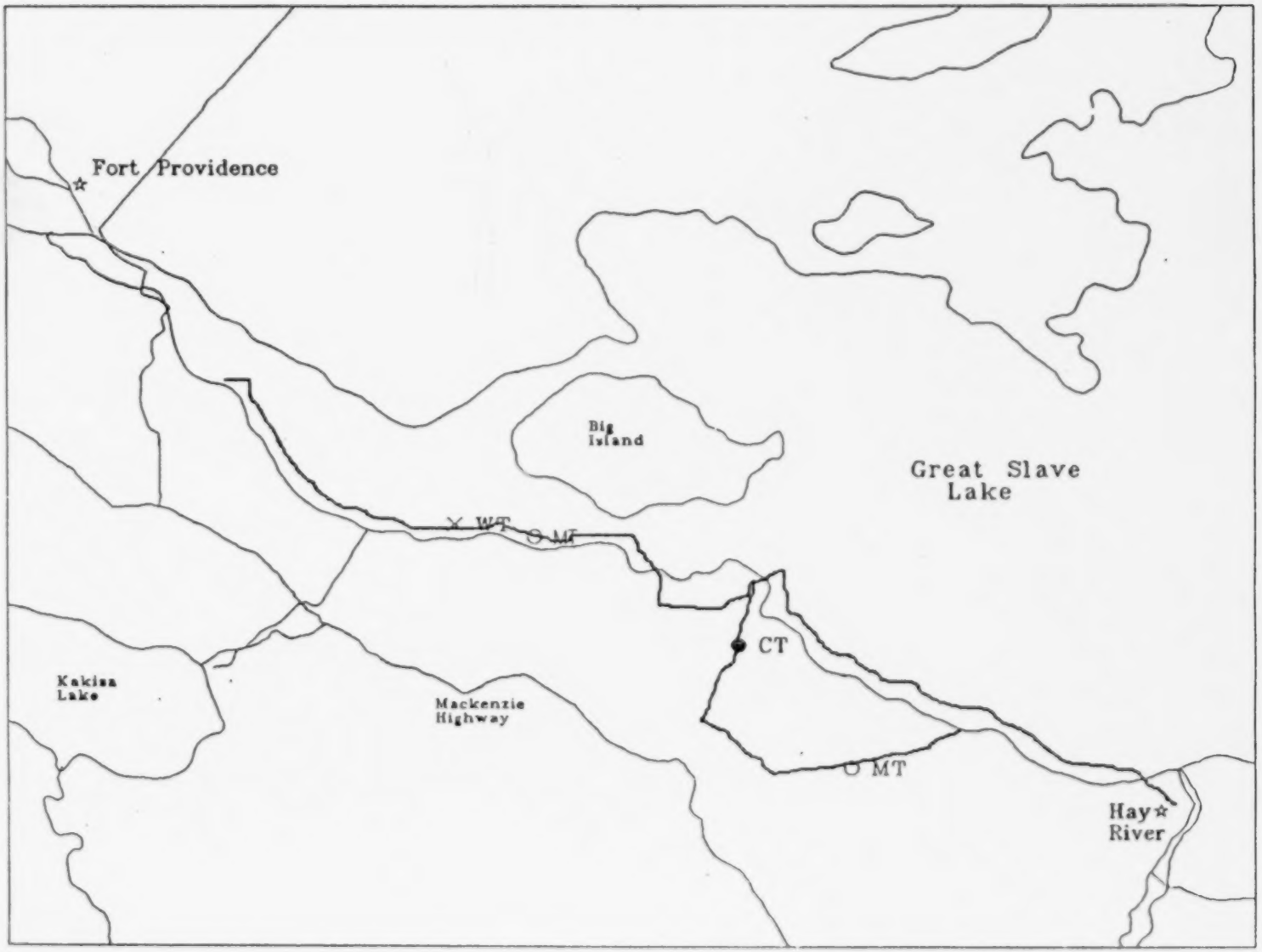
GROUND PATROL: FEBRUARY 08, 1994



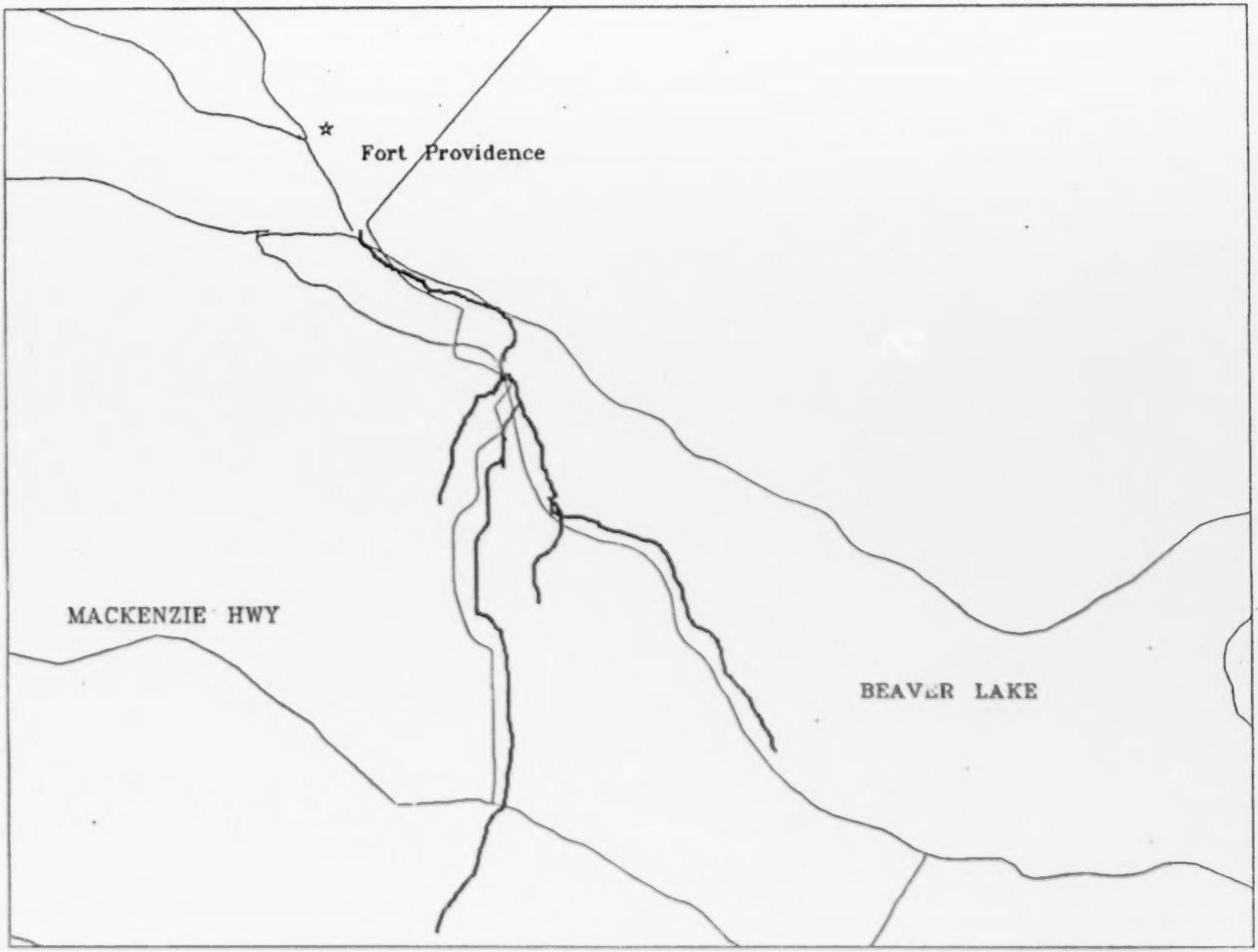
GROUND PATROL: FEBRUARY 11. 1994



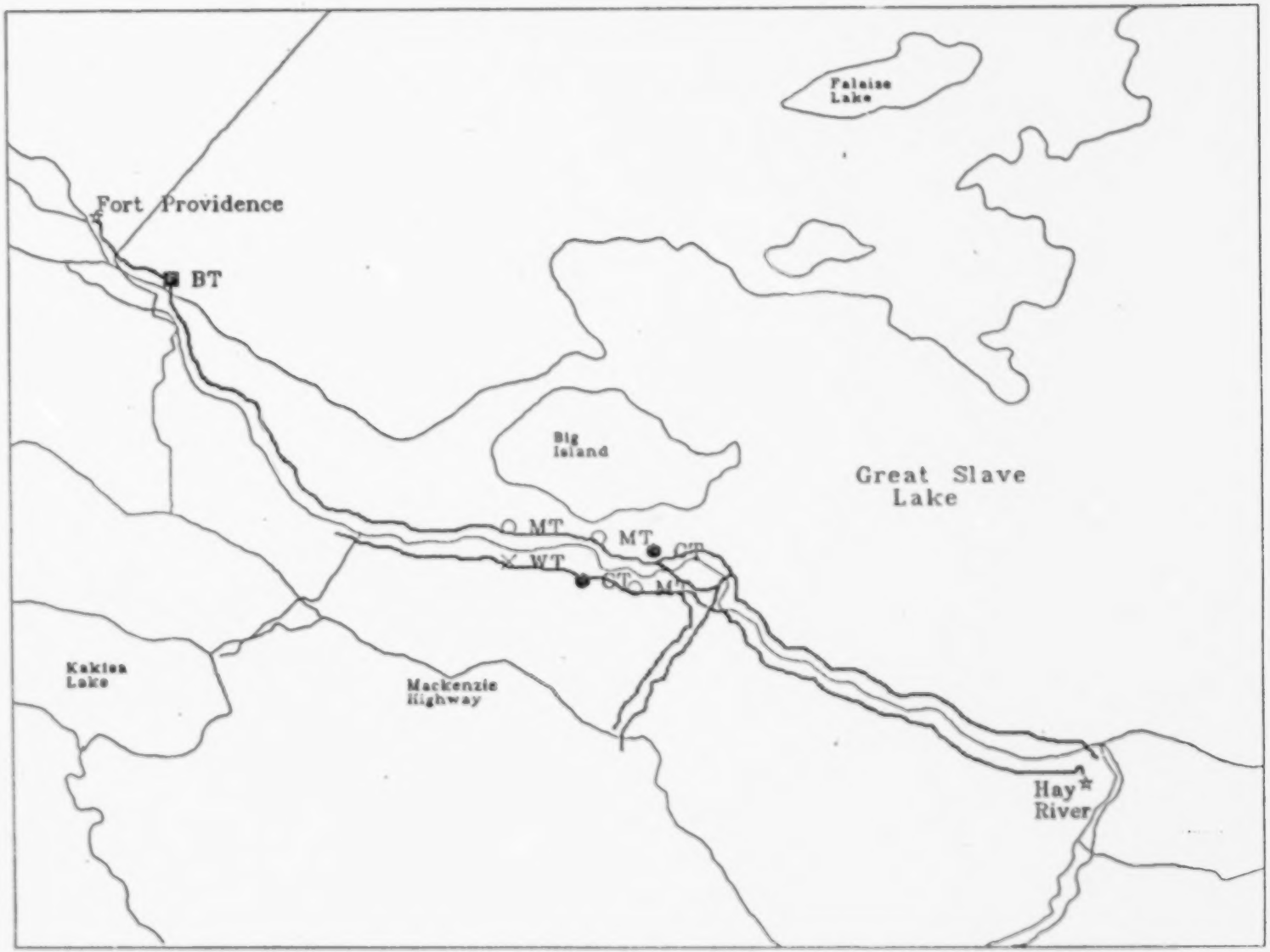
GROUND PATROLS: FEBRUARY 14-18



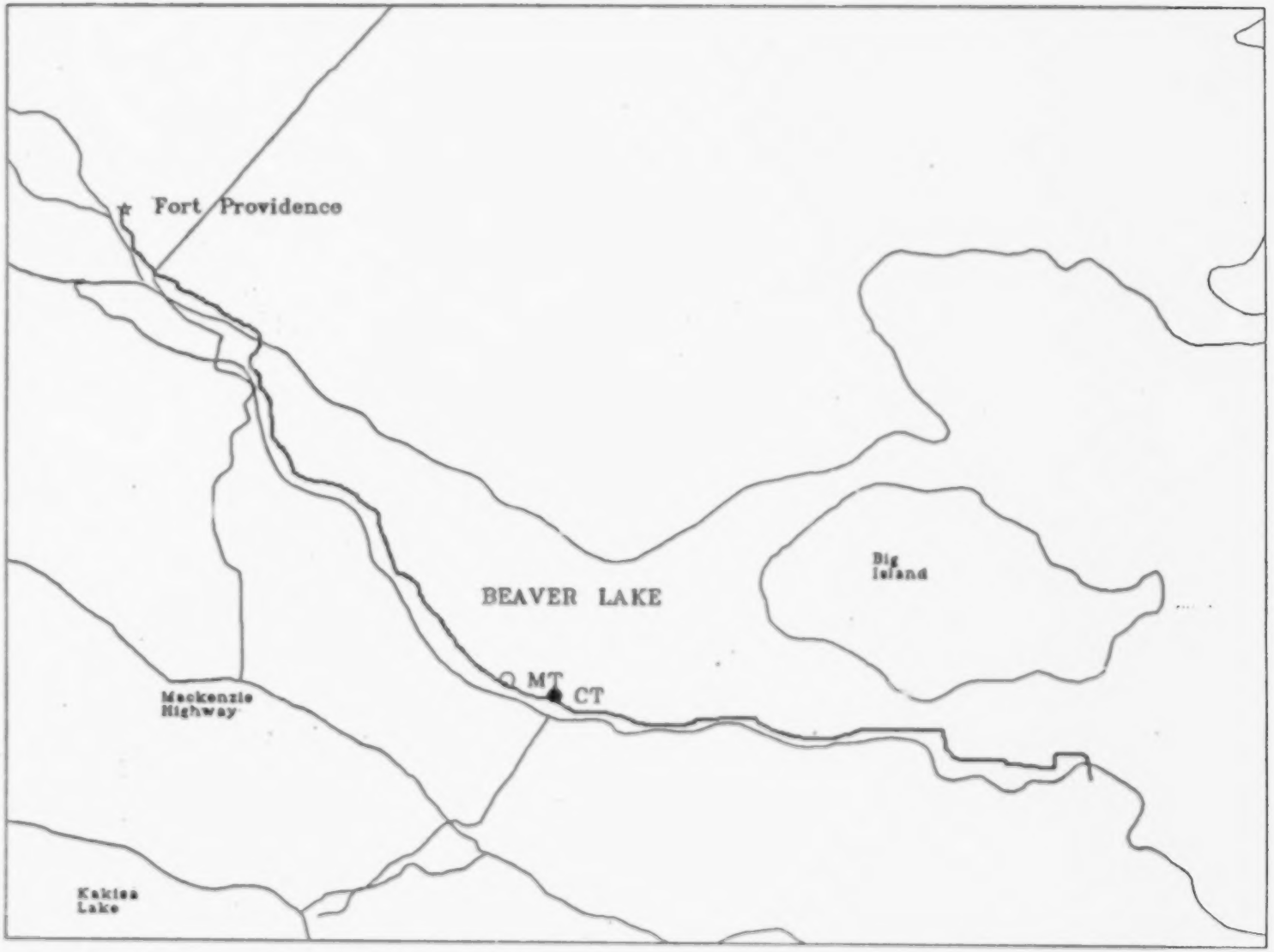
GROUND PATROL: FEBRUARY 15-17, 1994



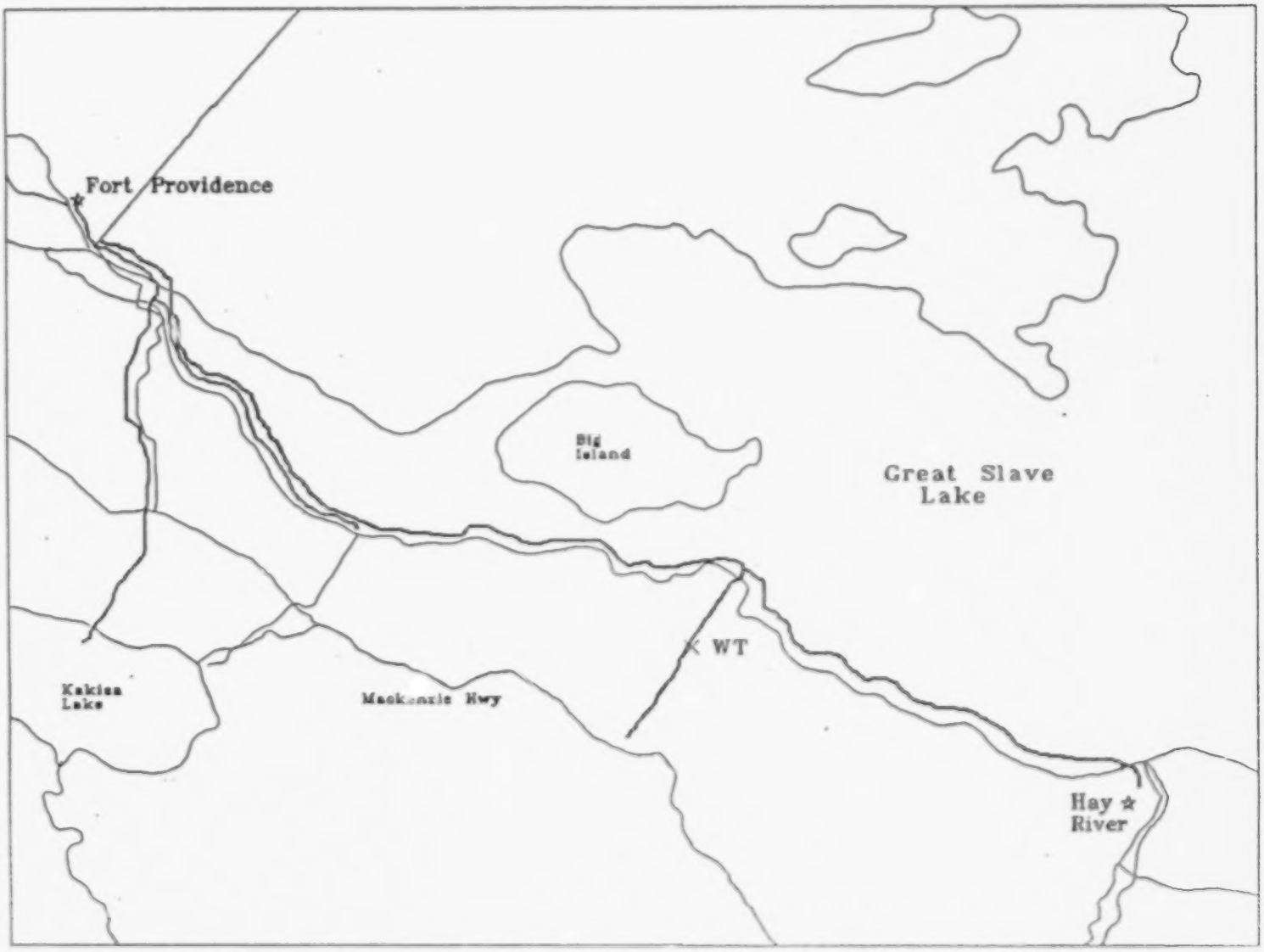
GROUND PATROL: FEBRUARY 18, 1994



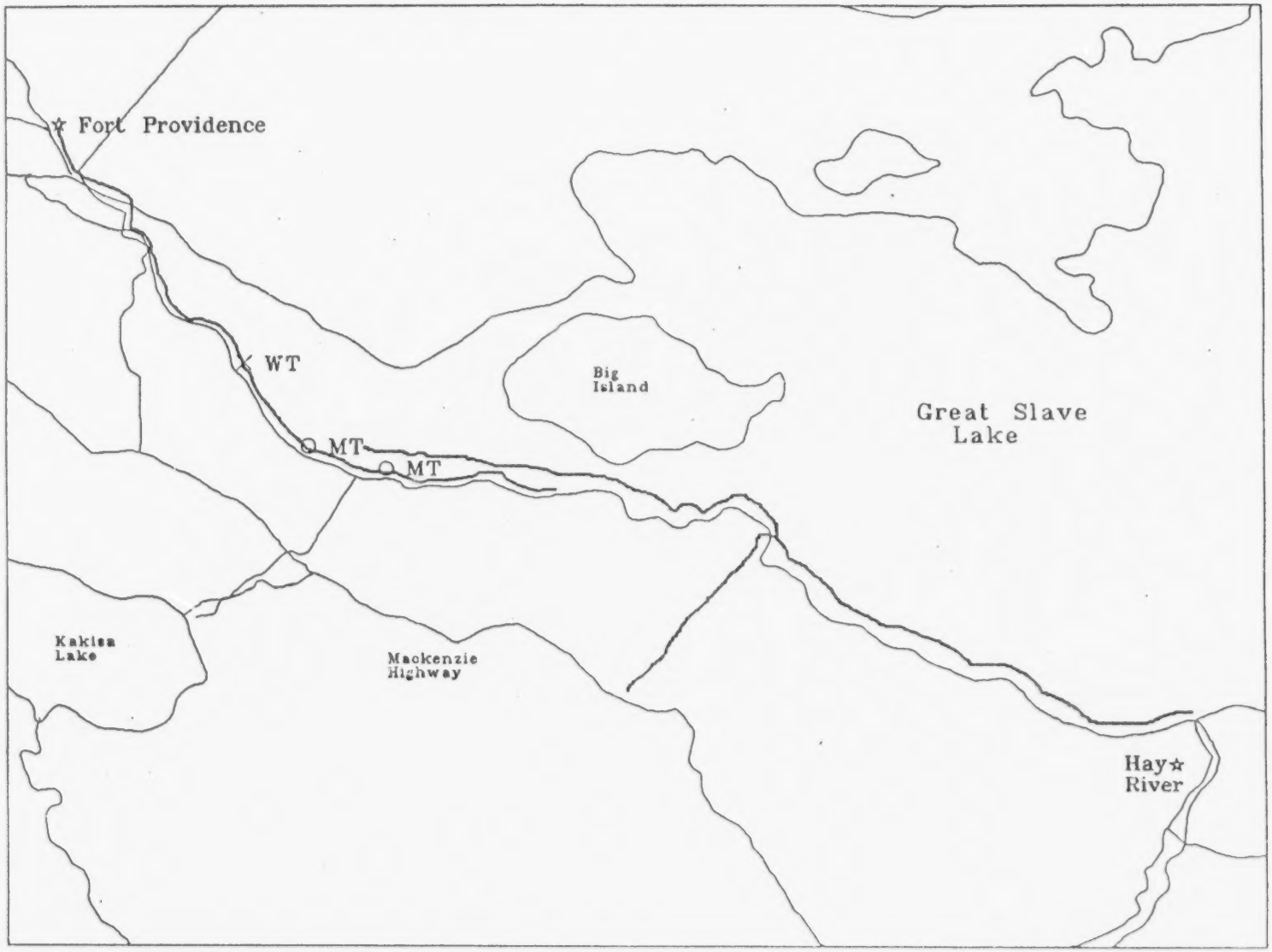
GROUND PATROLS: FEBRUARY 22-24, 1994



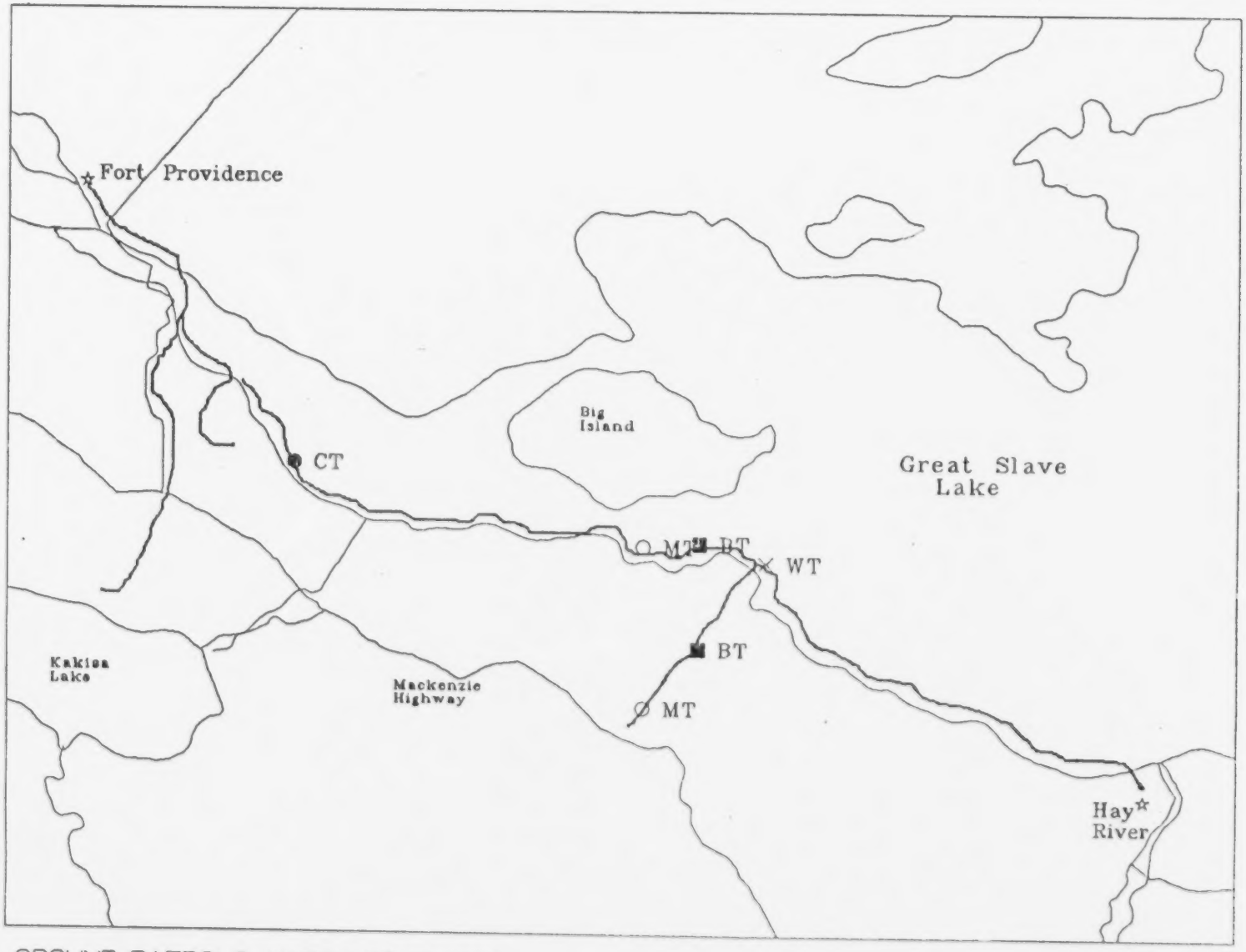
GROUND PATROL: FEBRUARY 23, 1994



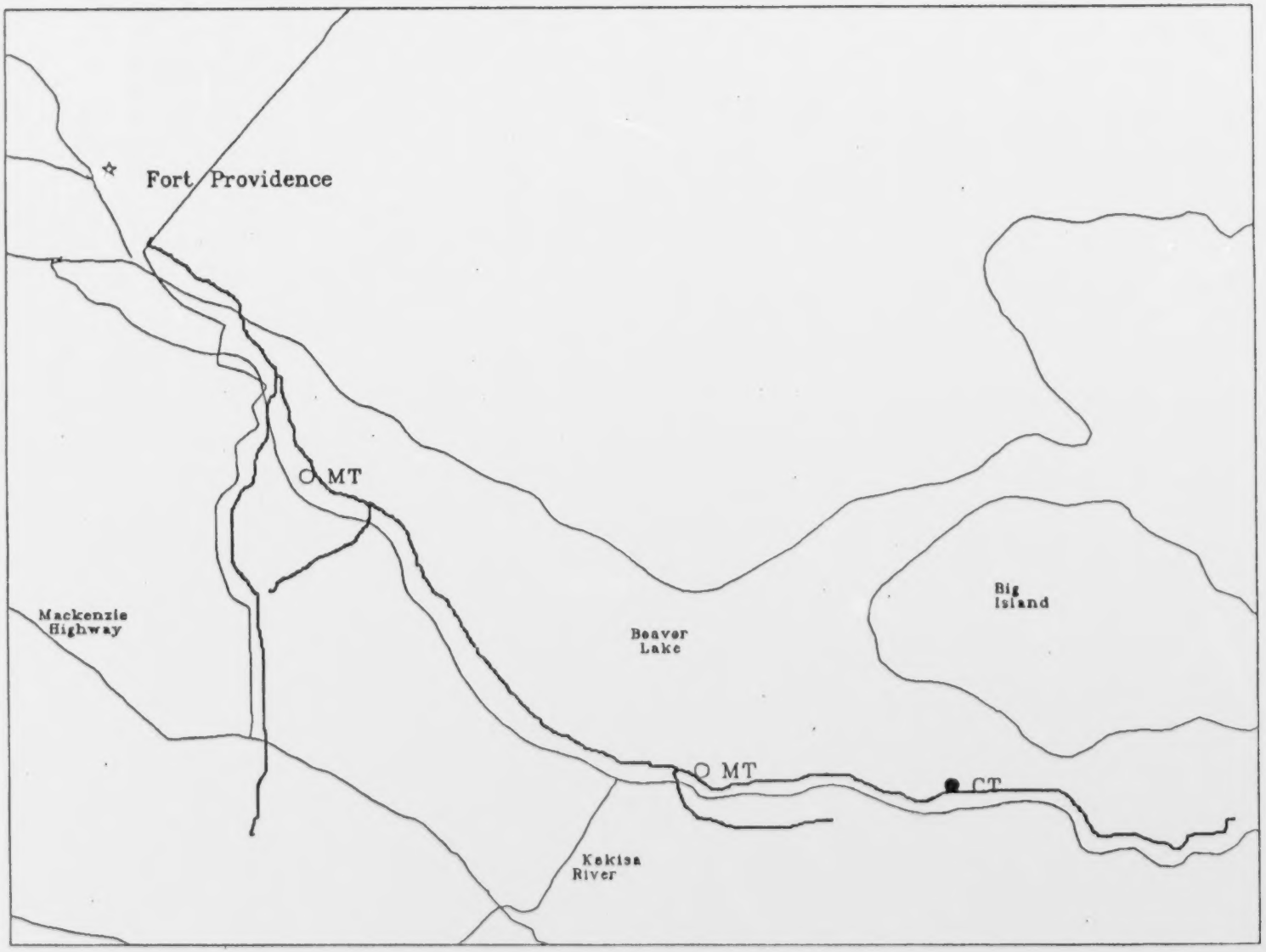
GROUND PATROLS: FEBRUARY 28, 1994



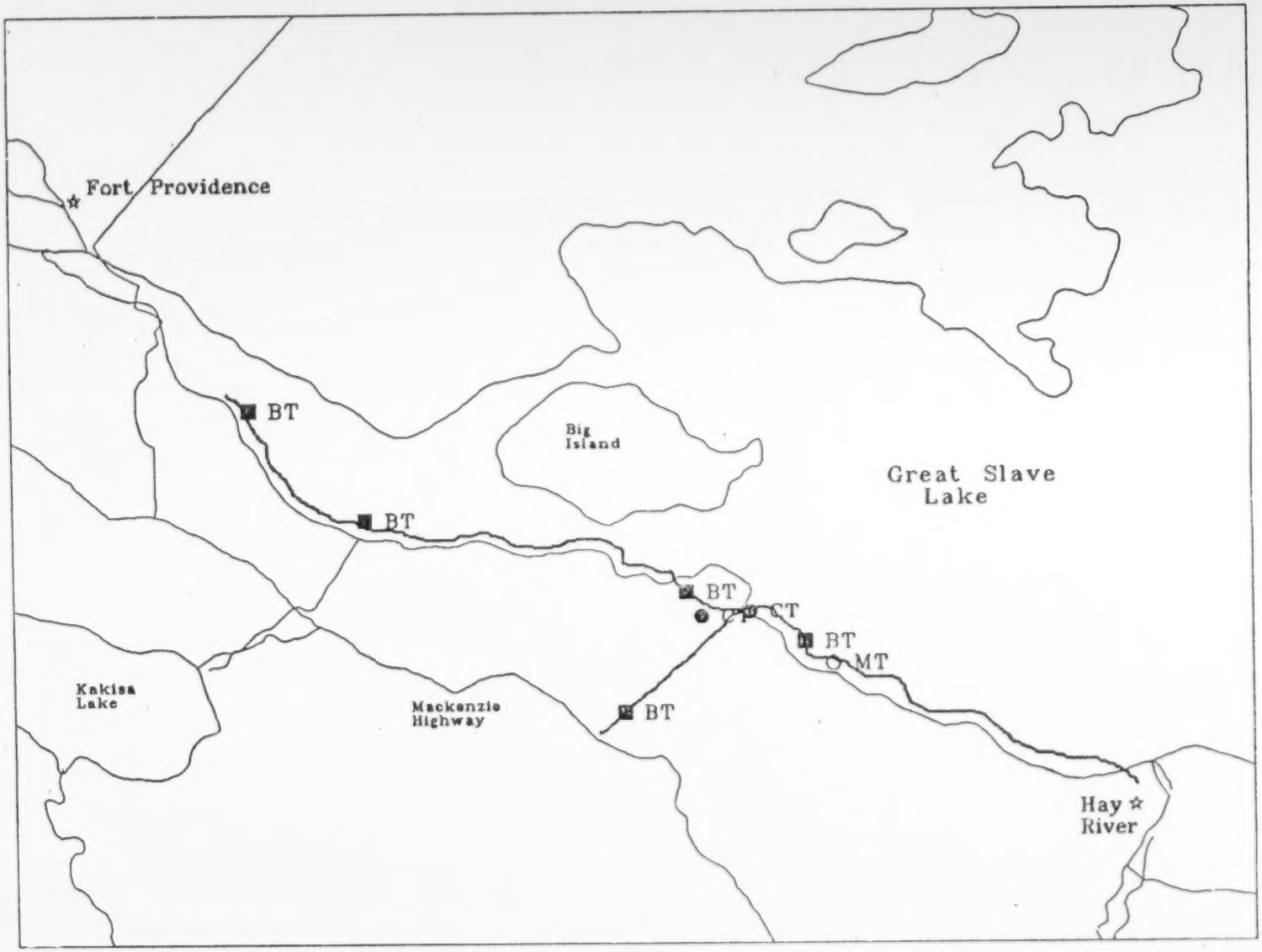
GROUND PATROLS: MARCH Ø1-Ø3, 1994



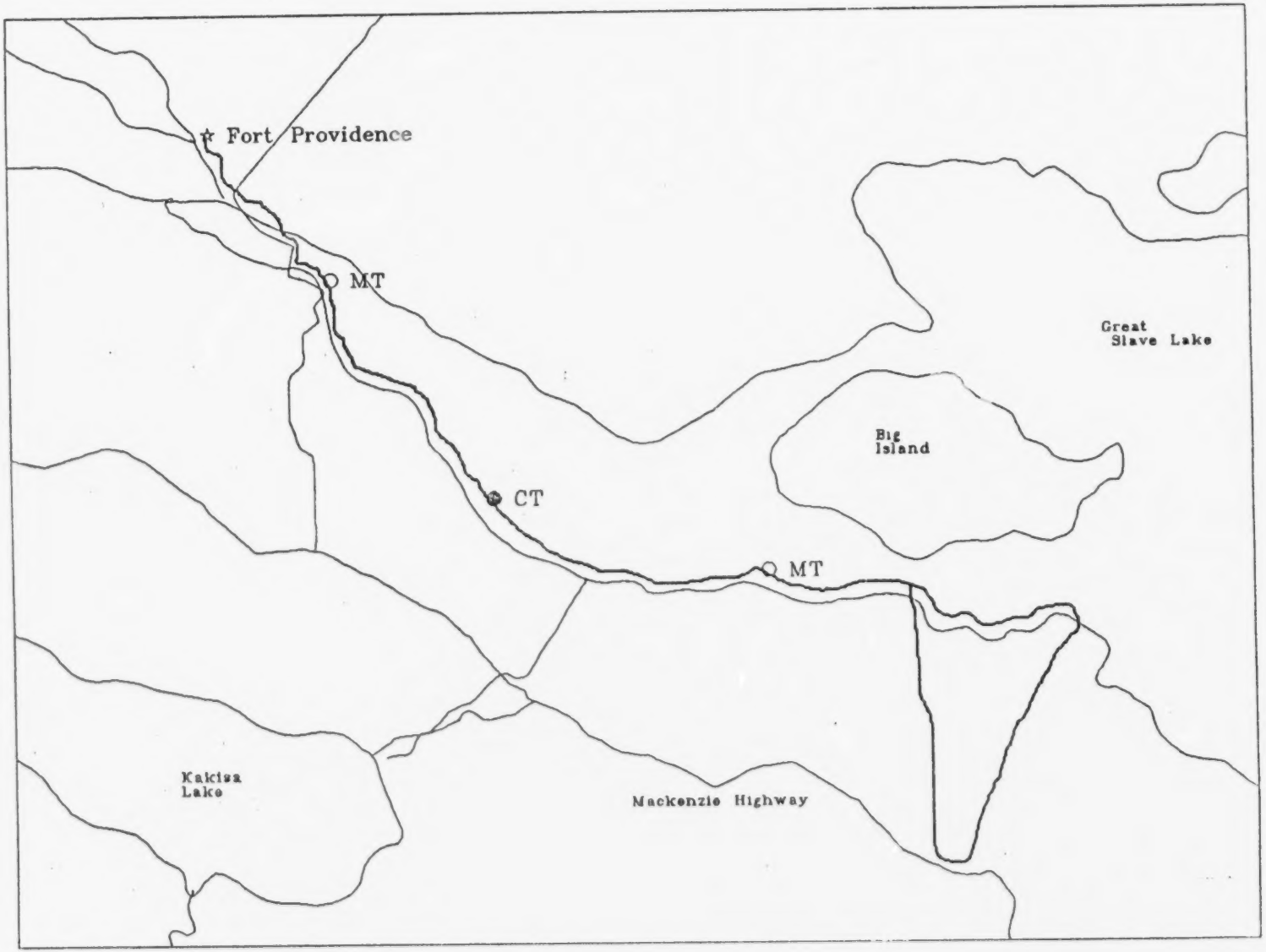
GROUND PATROLS: MARCH 07-10, 1994



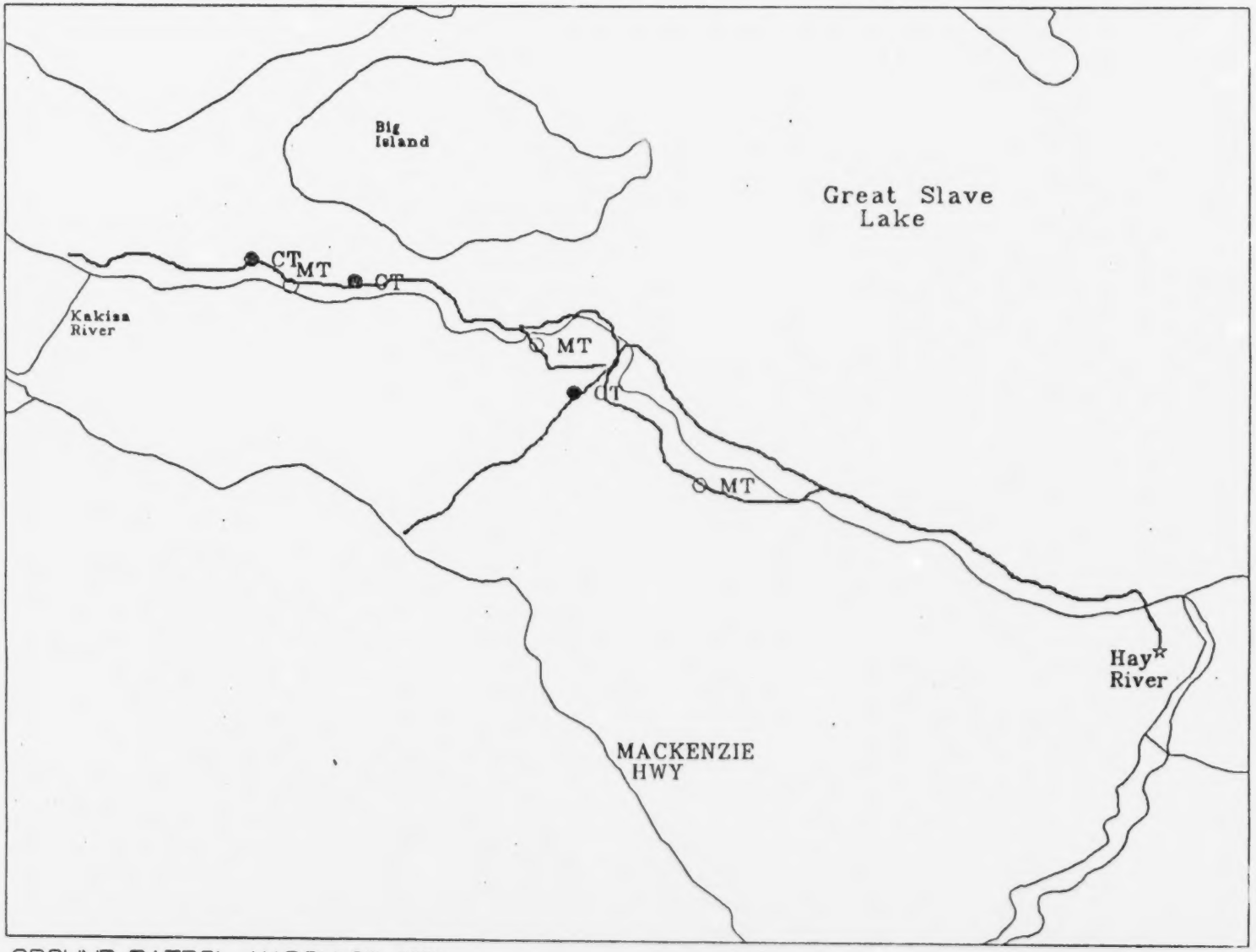
GROUND PATROLS: MARCH 14-18, 1994



GROUND PATROLS: MARCH 17-19, 1994



GROUND PATROL: MARCH 22, 1994

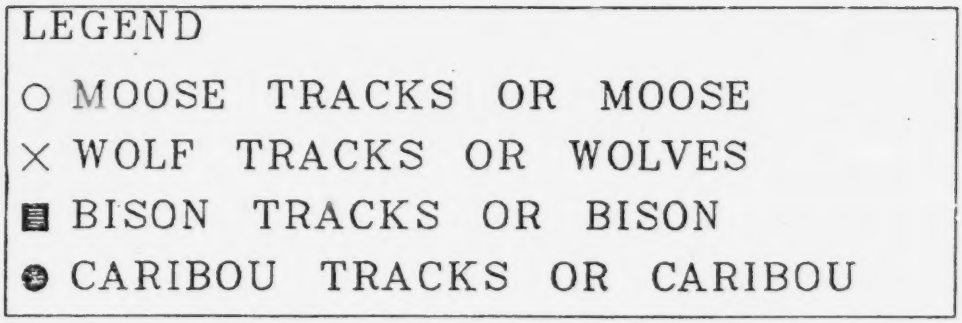


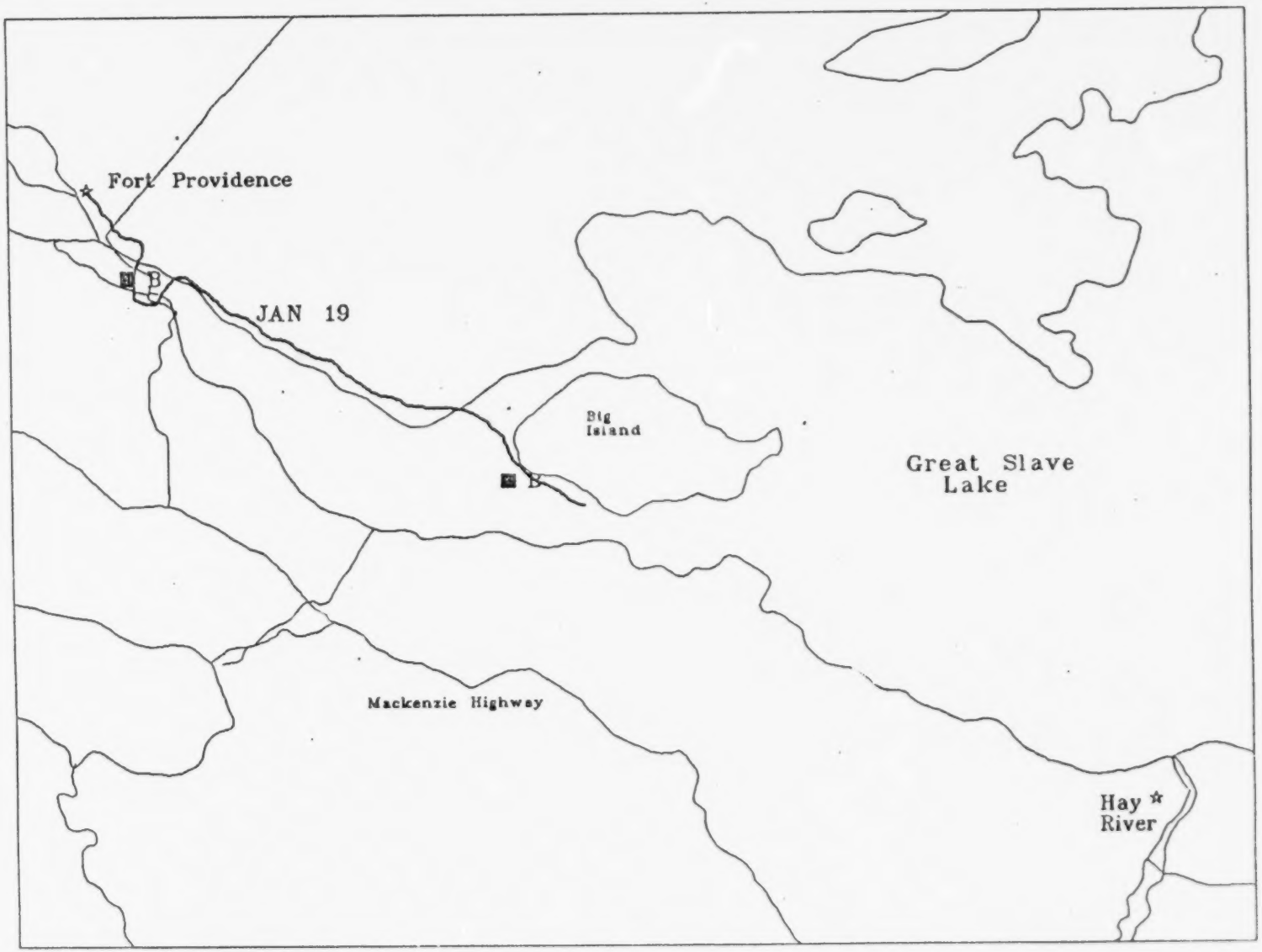
GROUND PATROL: MARCH 23, 1994

APPENDIX C:

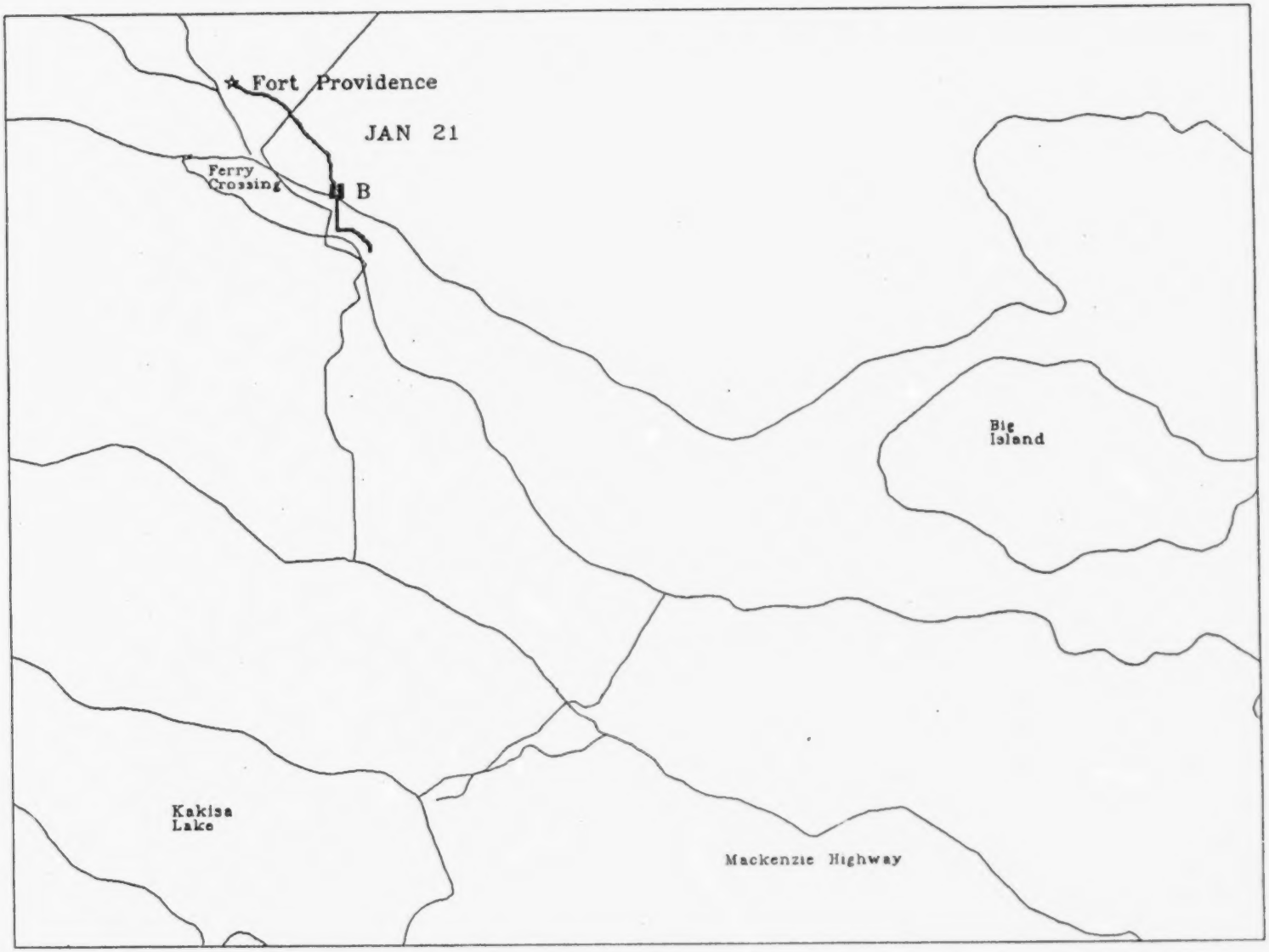
Call-out Flights in response to Bison Sightings

January 19, 21, 29, 1994

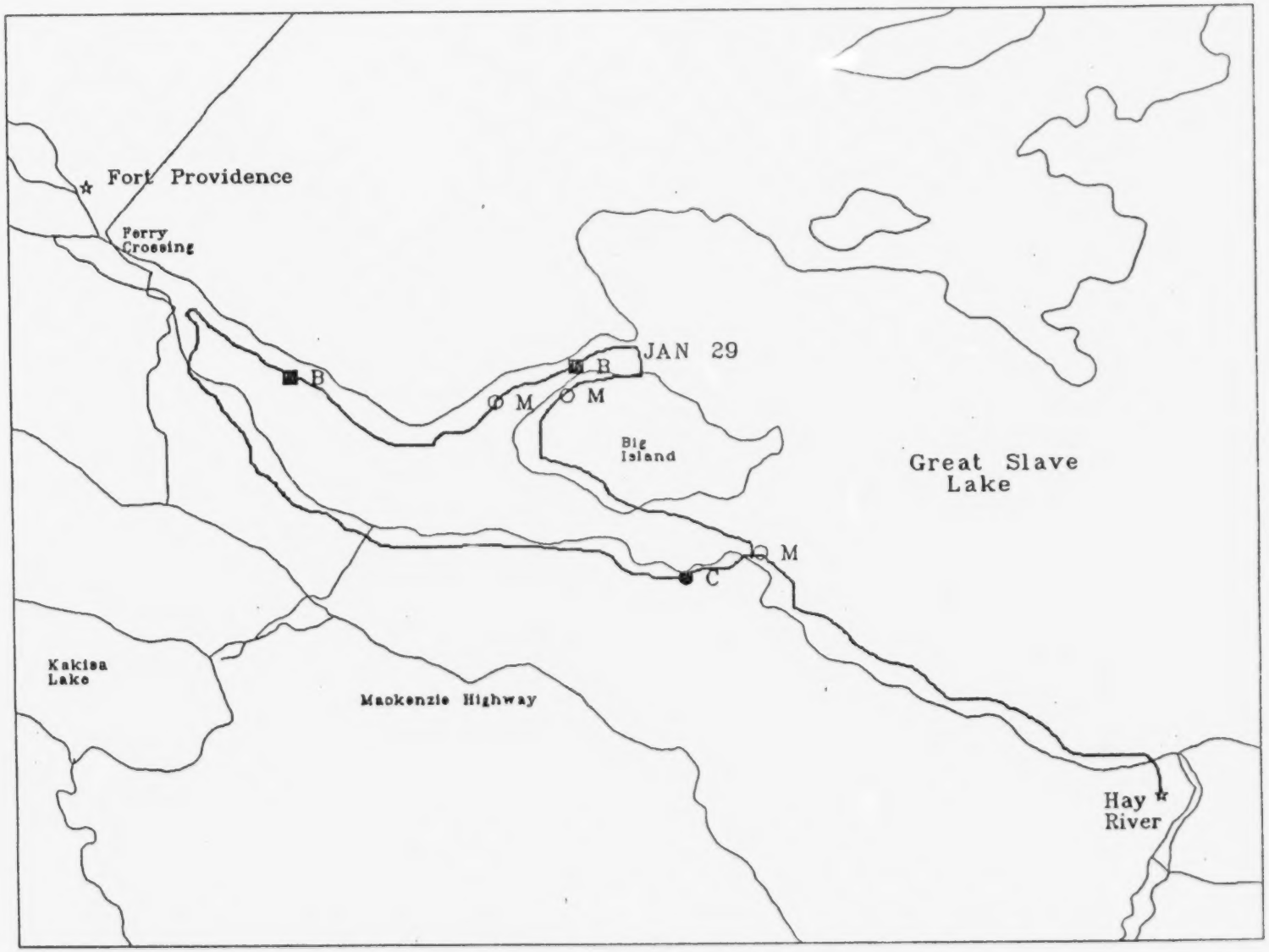




AERIAL SURVEY: JANUARY 19 - CALL-OUT DUE TO BISON SIGHTINGS



AERIAL SURVEY: JANUARY 21, 1994- CALL-OUT DUE TO BISON SIGHTING



AERIAL SURVEY: JANUARY 29, 1994 - CALL-OUT DUE TO BISON SIGHTING